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"Superior" Growth

THE continued expansion of our factory is due to two things:

First, the "Superior" Meter which, in its present perfected form, solves the difficulties which have heretofore caused dissatisfaction to gas companies. How well this has been accomplished is proven by the continued enthusiasm of the many representative companies by whom our meters have been adopted.

Second, the *continued* "Superior" Service which is offered by our company. We maintain a special department for repairing all makes, types and sizes of meters. Our service along this line is incomparable and our prices are most attractive.

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Apparatus for Measuring and Testing of Gases

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The By-Product Coke Industry Moves Forward

The Carnegie Steel Company has awarded The Koppers Company a contract to build a 366 oven extension to their by-product coke plant at Clairton, together with a by-product plant and benzol motor fuel recovery plant. This is important as an indication of the general upward trend of business and the continued abandonment of the beehive oven as a source of coke supply.

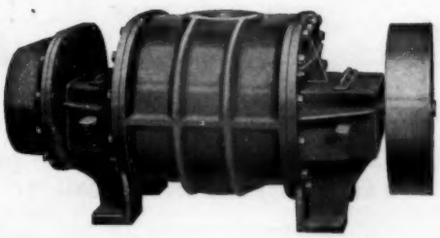
Even more important is the Carnegie Steel Company's decision to build the New Type Koppers Company Combination Oven, a logical sequence of the remarkable performance of this oven since it was first placed in operation less than nine months ago.

There are now 408 ovens of this new design in operation or under construction, as follows:

Carnegie Steel Company, Clairton, Pa.	366 ovens
Weirton Steel Company, Weirton, W. Va.	37 ovens
Chicago By-product Coke Co., Chicago, Ill.	5 ovens
Total	408 ovens

The KOPPERS COMPANY
Designers and Builders of
By-Product Coke & Gas Ovens
PITTSBURGH, PA.

VICTOR POSITIVE PRESSURE BLOWERS



For Industrial Installations

The Victor Blower is an accessory of interest to the industrial department in particular. Gas fired heat-treating and melting furnaces are always required in metal working factories. Their installation, along with blowers not only brings in a profit on the sale but increases the demand for gas.

Built along the same general design as the larger machines, these small blowers have a number of distinguishing features. The bearings are renewable sleeves made of phosphor bronze tubing, and are lubricated by rings dipping in large oil reservoirs. The gears are enclosed in a one piece oil tight housing and run in a bath of oil.

Prices and discounts, together with descriptive bulletins, will be furnished to the Industrial Department.

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These same blowers are quite often used for revivifying purposes, being driven from the large exhauster shaft.

Bulletin 21—VICTOR BLOWERS—was recently issued.

The

Connersville Blower Co.

Connersville, Ind.

1431 Monadnock Block
Chicago

114 Liberty St.
New York

American Gas Journal

SIXTY-THIRD YEAR

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"The Future of the Gas Industry"

Hill of Babson's Discusses Some Problems

Boston, Mass.—The future of the gas industry is to a considerable extent in the hands of the gas appliance men, Olin W. Hill, director of Investment Bulletin, Babson Statistical Organization, told the members of the Gas Sales Association of New England at their first meeting held here Friday evening, Nov. 10. Mr. Hill, it is understood, was presenting the views of Mr. Babson as well as himself and, in light of Mr. Babson's attack on the industry of a few months ago, the speaker's words were given close attention.

Vigorous defense of the industry was made by several members of the association, prominent among them being William Gould, Boston, and F. C. Freeman, of the Providence (R. I.) Gas Company.

Because of the wide discussion that followed Mr. Babson's first statement regarding the industry, Mr. Hill's speech is given exactly as prepared in manuscript form. There were some slight changes made by the speaker but they were not of any great significance. Mr. Hill illustrated his talk with two charts, one showing a comparison (by ratio) of the gas and electric industry, and the other a chart showing the trend of business conditions as reflected in a selected group of industries.

Mr. Hill's speech was as follows:

"Friends, Romans— . . .
I come to bury Caesar. . . .
But yesterday the word of Caesar might
Have stood against the world; now lies he there."

One of our eminent statisticians, the newspapers say, has predicted that the gas lighting company must go the way of the kerosene lamp and the tallow dip.

And, a few weeks later, the chief beneficiary of the kerosene lamp cuts each of its shares into twelve pieces—out of surplus!

As for the tallow dip, you say, that surely has gone. But no, here are the statistics of a concern making candles:

Plant in Syracuse, N. Y.

Fifty acres; thirteen buildings; 3,100 ft. of railroad sidings; four-story brick building, 190x50 ft., devoted to making candles exclusively. Branches in New York, Boston, Chicago, St. Louis, Montreal and Mexico City. Pays 8 per cent dividends on $1,600,000 preferred stock and 10 per cent on the equivalent of $1,000,000 common (100,000 shares, no par).

Now don't misunderstand me. These facts are in no sense against the prediction. Nor do I appear here in any way to apologize for or modify it. The lesson for you, men, is right there—in the oil and the candle business.

These concerns did not make their profits by sticking to tallow dips and kerosene house lamps. They are two big companies, the survivors out of thousands who were in business when tallow dips and kerosene lamps were household necessities. These concerns found, or devised, new ways of making their product marketable when the old business weakened.

The candle company makes decorative candelabra, fixtures and shades which create the demand for their candles.

The oil company found kerosene but one of thirty or more products of its refineries. While former waste has become the chief object of the refining process, it delivers the kerosene in convenient packages to the portals of the Llhama's shrine in Thibet.

Have Right to Self-Congratulation

Taking the statistics of the gas industry as a whole, you have a right to indulge in self-congratulation. Despite electricity, despite the discoveries of untold wealth in natural gas, the output of artificial gas has more than trebled in twenty years and doubled in the last ten (from 100,000,000,000 to over 326,000,000,000). In but two years, 1902 and 1905, has there been a smaller output than the year before.

But in comparison with the rate of growth of this young electrical giant I call you to read the handwriting on the wall.

The chart which I have here shows the total power output annually of eight representative companies. We have taken this basis because figures for the total power output of the country in any satisfactory completeness are not available back of three years ago. The graph is plotted on ratio, so that the comparison is fair. The importance of these eight companies you may judge by noting that the total output of over seven billion kilowatt hours is about 20 per cent of the total output, 40,926,533,000 K. W. H., for 3,200 reporting plants in 1921.

Starting back at the point fourteen years ago where the rate of progress in the two industries was the same, you will notice that the electrical companies have developed five times the total output while total volume of artificial gas has slightly more than doubled. The average daily output of electricity for September was 135,200,000 K. W. H. as compared with 131,000,000 for August, and about 120,000,000 for the first six months. This would indicate a volume better than 45,000,000,000 K. W. H. for the year 1922.

The passing of gas as a lighting industry is told in the statistics of one company after another. These show number of lamps served in 1921 only 30 to 35 per cent that of ten years ago. In the same time, with some uniformity, there has been a doubling of the number of gas stoves and a doubling of the amount of gas sold.

But note that the number of gas companies in 1919 was 1,020 as compared with 1,244 in 1914.

The Investor Must Heed

This is an indicator to which the investor must give heed. He must pick only those companies which are alive to changing conditions. In support of this let me summon to your memory the experience of the bondholders of the old Consolidated Gas Company of the city of Pittsburgh which, with the South Side Gas Company, suspended operations in 1919. Holders of $5,000,000 first mortgage 5s, 1948, issued only in 1898 (their interest in default since 1916) find themselves obliged to accept preferred stock of the Philadelphia Company, a holding concern subject to all the funded debt of the company and its subsidiaries.

Directly opposite is the case of the investors in the old Cincinnati Gas Company. Well chosen policy made that company a part in the combined artificial and natural gas and electric business of its territory. The increase in daily gas consumption from 2,000,000 to approximately 100,000,000 cu. ft., together with the full development of the electrical business, has gone to strengthen equities of the old Cincinnati Gas investors. Baltimore and New York, as you know, represent similar cases of success by combination with electricity, while Chicago, as well as Springfield, Mass., furnish examples of virile management making the gas business thrive on a basis of direct competition with electricity.

As with candles, and as with the oil business, the trend of the gas industry unquestionably will be toward "digging in" by a reduced number of the larger and better managed companies serving concentrated areas of population. Success for the future is largely a question of finding outlets for the by-products in such a way as to make the lowest possible cost for gas. You are now serving with cooking appliances an average of one out of about every three homes. Considering the large element of population beyond the reach of gas mains, it must be conceded that the prospect for large expansion does not lie along this line.

House Heating Logical Field

The supply of fuel for house heating plants is the next field naturally to suggest itself. The development is perfectly logical. There is not a single chimney in Boston or any other city but what is wasting products more valuable than those it consumes. There is not a single householder but would willingly adopt the convenience of gas as his heating plant fuel with the question of excessive cost eliminated.

The attempt is being made to teach us in New England to burn soft coal in our homes. This is the gas companies' opportunity. If there is a logical reason for increasing the use of soft coal the way to introduce it in the homes is through the gas pipe, not through the coal bin.

Again I say the solution of the problem is in finding use and value in the by-product of gas making. We know of one company that already is doing this. It would make coke in large quantities in any event for industrial purposes in its territory around Schenectady. The gas, therefore, may be considered a by-product of the coke at relatively low cost.

I was very much interested in the proposal recently made at Atlantic City that gas would be used in the future for making electricity. Why shouldn't it be. Every chimney belching black smoke is broadcasting potential dividends to the four winds. The steam generating plant is, as we all know, a serious offender.

Here is just one other suggestion that may or may not be practical. I do not assume to know, but simply raise the question. For industrial plants and all other users of large units, both power and light, there is now the alternative, either of becoming a central station customer, or running on an independent steam plant. Is it possible that there is some level at which local generation of electricity for power or lighting, by the use of gas as fuel, would be both economical and satisfactory?

Favors Development Work

Our position in the business cycle is entirely favorable to development work looking forward to the long future for results. We have passed the extreme of depression and for several months have been making headway toward wiping out the red ink figures accumulated during two preceding years. It will take some time longer of this type of constructive work before the foundation is laid for the next period of expansion.

The industrial situation in its relation to the supply of labor makes readily marketable any appliance which will tend to elimination of the servant or unskilled labor problem. Whatever you accomplish in this direction now it is fair to predict will work increasingly to your benefit for the next five to ten years.

Furthermore, we are now again in a constructive period. You know each half-century is divided, roughly, into the two phases, constructive and predatory. Recall, for instance, 1880 to 1900 and who are the outstanding figures. I submit Havemeyer and Searles, Flagler and Rockefeller, Carnegie, Harriman, Huntington and James J. Hill—all men whose brains conceived great things.

Now taking 1900 to 1920, what names are representative of that period? Well, how about "Bet-a-million Gates," the Moore brothers, Reed, and the other tin millionaires—Whitney, Yerkes and Brady of the tractions, Lawson of Bay State Gas and Trinity Copper, and Ponzi. It was a period when wits seemed more profitable than brains.

We are now, as I say, in one of these constructive periods. It is a time of thrift and accumulation of resources. As a corollary it is a time of keenest competition. The premium is on efficient management, volume of production and low overhead.

The opportunity is yours. The future of the gas industry is to a considerable extent in the hands of you—the gas appliance men.

Mr. Gould, in discussing Mr. Hill's point that one in three homes are now being served with gas for cooking purposes, declared that in New England there are approximately 1,164,000 consumers of gas and there are in use 543,000 ranges, 88,700 water heaters of various types, and 71,500 room heaters. This leaves a possible market of 54 per cent for ranges, 92 per cent for water heaters and 94 per cent for room heaters of homes that are now gas equipped.

Referring to the entire United States, Mr. Gould pointed out that of the approximately 8,000,000 gas consumers 66 per cent are not using ranges, 93 per cent are without water heaters and 95 per cent have no room heaters.

As to gas lighting, Mr. Gould drove home the point that almost 25 per cent of the gas used in the United States is used for lighting.

In replying to Mr. Gould, Mr. Hill stated that he did not dispute any of the facts brought out, but he declared that he still maintained that the salvation of the industry lies in the development of by-products.

Mr. Freeman, in opening his discussion, stated that he had been in the gas business for twenty years and "if I had known twenty years ago what I know today regarding the gas industry I would have unhesitatingly entered it."

Mr. Freeman also took up the question of the comparison of kilowatt hours of electricity and cubic feet of gas, pointing out how, on a heating basis, gas is so much more efficient and economical than is electricity.

"Our duty in this world," declared Mr. Freeman, "is to render service to mankind. We in the gas business have a wonderful opportunity to serve by delivering heat energy in its most usable form."

Mr. Freeman then went on to compare the cost of gas and electricity in his community (Providence), showing that on a heating basis electricity costs the domestic consumer ten times as much as gas. He also compared from a dollars and cents' standpoint the annual bills of consumers of Providence. The average bill for domestic use is $26.12 annually, he said, whereas electricity starts with a $3 per month service charge or $36 annually.

"To me," asserted the speaker, "the gas business is a hundred-year-old baby, just beginning to open up its eyes.

To my mind there are just two things wrong with the business. The first thing is that we are laboring under an antiquated type of rates. It is one hundred years old and is not in the form whereby the various users are paying the cost of serving them."

Mr. Freeman said the second thing that is wrong is the fact that the industry has not been advertising itself. He explained that he meant more than newspaper space.

The speaker declared that the future of the industry, to his mind, lies in some degree in the home. He added, however, that the large industrial field has hardly been scratched.

The business of the industry lies in converting into transmittable heat its raw materials, the speaker pointed out.

In conclusion, Mr. Freeman declared that he wants to remain in the gas business.

During the course of the meeting, which was preceded as usual with a dinner, Mr. Hill stated that there had been five and a half billions of new buildings in this country this year.

Others who discussed points made by Mr. Hill were Charles Aaron, of Walker & Pratt, and Mr. Bond, of Griffin & Bond.

This was the first meeting at which F. A. Woodhead, the new governor, presided.

Cyrus Barnes, of the Tenney organization, presented a report for a committee which had been appointed to consider ways and means of taking part in a home beautiful exposition to be held in Boston next April. A committee of one will be appointed to act with representatives from other New England associations in this matter.

Mr. Gould, who is chairman of the commercial section of the American Gas Association, declared that the work of that section will be devoted to aiding the small company, although he emphasized that all of the plan formulated can and should be used by the larger companies.

He also stated that there is a move on foot to award prizes for certain results. These prizes, if decided upon, will be announced later. The section, he said, would work closely with the manufacturers' section of the A. G. A.

New Technical Paper Issued

Technical Paper 303, "Value of Coke, Anthracite and Bituminous Coal for Generating Steam in a Low Pressure Cast Iron Boiler," by John Blizard, James Neil, and F. C. Houghten, has just been issued by the Bureau of Mines.

The primary purpose of the tests described in this paper was to determine the relative steaming values of coke, anthracite and bituminous coal when burned in a low pressure boiler and fired by hand in fairly large quantities at a time.

A secondary purpose of the tests was to separate the heat losses, and to examine them carefully to determine the change in efficiency with the method of firing the fuel and manipulation of the draft dampers, with the rate of evaporation, and with the various fuels burned.

Tests were made at different rates of steaming with coke, anthracite and bituminous coal. Two tests also were run with a mixture of equal weights of bituminous coal and fairly coarse coke breeze, and two more with a mixture of equal weights of bituminous coal and a finer coke breeze. The calorific value of the coke ranged from 10,700 to 11,900 B.t.u. per pound; of the anthracite from 11,700 to 13,300 B.t.u., of the bituminous coal from 12,900 to 13,900 B.t.u., and of the coke breeze-bituminous coal mixture from 11,200 to 11,800 B.t.u. The bituminous coal contained less ash than the coke or anthracite, about the same proportion of moisture and, of course, far more volatile matter.

The mean steaming values of the coke, anthracite and bituminous coals were about the same. At the low rate of steaming the coke and anthracite evaporated more water than the bituminous coal, and at the higher rates of steaming the bituminous coal evaporated more water than the coke or the anthracite. The steaming value of the mixture of the coarser coke breeze and bituminous coal was about 80 per cent of that of bituminous coal alone, whereas the mean steaming value of the mixture of finer coke breeze and bituminous coal was lower than that of the mixture of coarser coke breeze.

Technical Paper 303 may be obtained from the Bureau of Mines, Washington, D. C.

Not All "Unaccounted for" Is Leakage

Pacific Coast Gas Association Committee Makes Report

The gas which we cannot account for is not all leakage, but in our method of recording it appears entirely as a loss. Some of it is actual leakage and it is possible that a portion of this can be prevented; while a part, no doubt, beyond control, is due to natural laws. Some of the loss which can be prevented may cost more than the gas is worth, and again, the leaking gas may cause more damage than the value of the gas or the cost of its saving. As efficiency and conservation is the demand of the day, it is necessary that every possible saving be made. Therefore, it is important that every company be able to keep a constant check upon the amount of actual gas leakage. To do this it is necessary to know how much of the unaccounted for gas is actual leakage and how much leakage is reasonable.

It is not expected that a complete solution of this problem be made in this report, but we have attempted to analyze the subject in such a way as to point out a definite plan of investigation. At best we can only arrive at a tentative basis upon which to compare the amount of unaccounted-for gas, on any system with that of another system, under known conditions. The object of this study is therefore to find the items which enter into or cause the difference between the amount of gas put into a distribution system and that accounted for in sales and company use. Not all of these items require serious consideration, but a report cannot be complete without mentioning them.

After these items have been segregated their mathematical relation to the amount of gas supplied to or taken from the system must be determined. If this is done it will be possible to establish a basis upon which comparisons may be made between any number of systems, in so far as their mechanical fitness is concerned. What is a reasonable amount of unaccounted-for gas, however, also depends upon the value of the gas, the probability of damages and the cost of effecting savings. A complete study, therefore, of the matter of unaccounted-for gas would involve not only details of the factors which enter into it, but also the cost of the various equipment used and the expense of their maintenance and repairs.

Not True Basis of Comparison

As has often been proven, the expression of unaccounted-for gas as a percentage of the sales or send-out is not a true basis for comparison. Neither is the expression of unaccounted-for gas as the amoum of annual loss per mile of main of a given size entirely satisfactory. Some channels through which gas is lost bear a direct percentage to the amount of gas sent out; others are in proportion to the miles of mains, while some are related to the number of services, pressure carried, the quality and kind of gas, the age and type of system and the character of the soil. Obviously, there is no short method by which a true unaccounted-for gas coefficient may be obtained which will apply equally as well to all systems. It appears necessary to obtain coefficients for each factor for the conditions existing. The sum of the amounts due to each item will then be the allowable unaccounted-for gas for each system. To this end the following items have been segregated:

FACTORS RESPONSIBLE FOR UNACCOUNTED-FOR GAS

1. Errors in station meters.
2. Errors in consumers' meters.
3. Accuracy of readings of consumers' meters.
4. Corrections for temperature and pressure.
5. Condensation.
6. Losses due to blowing drips.
7. Losses during construction work.
8. Losses due to blowing of holder seals.
9. Stolen gas.
10. Actual leakage from holders.
11. Actual leakage from transmission mains.
12. Actual leakage from distribution mains.
13. Actual leakage from services.
14. Effect of pressure upon actual leakage.
15. Percentage of gas sent out under high pressure.
16. Effect of the character of pipe upon leakage.
17. Effect of the type of joints upon leakage.
18. Effect of the age of the distribution system upon leakage.
19. Effect of the character of soil upon the life of the pipe.
20. Effect of the characteristics of gas upon leakage.
21. Unusual conditions, such as mains under heavy traffic; crossing streams; subject to unusual amount of electrolytic action.
22. Cost per mile of system.
23. Cost of locating leaks.
24. Cost of repairing leaks.
25. Value of gas lost.
26. Probability of damage.

The first ten of these items may be readily checked, determined, or closely estimated in any case. The leakage in the mains and services are the factors in which we are interested. The leakage from services and service connections are primarily dependent upon the number and average length thereof, and have been segregated for individual consideration for that reason. If on one system there are 120 services per mile of main, the loss due to this cause will be proportionately greater (all other conditions being equal) than a system having a lesser number of connections per mile. In rural districts the services are longer than in towns and much longer than in cities. It is necessary, therefore, to find a coefficient to apply to the number and average length of services which will represent a reasonable amount of leakage from them.

The leakage from the distribution mains should be segregated from that of transmission mains because the type and conditions of construction are usually quite different. The pressures carried are different and to

*The committee which presented this report consisted of W. M. Henderson, chairman; F. Wills, B. G. Williams and R. M. McCauley.

apply a correction for the various pressures carried, it will be more convenient to keep these two separate.

The amount of leakage from the mains depends primarily upon the length and size. The size of the main influences its strength, thickness of walls (as against corrosion), the exposed surface and circumference at the joints. These all have their effect upon the amount of leakage per mile of main. But to attempt to carry factors for each size of main will require endless investigation and probably without greatly increasing the accuracy of the results. It is therefore advisable to choose one size of main, to which all others should be reduced for comparison.

Common practice is to use either three, four or six inch sizes for this purpose. From the literature upon this subject, it appears that the six-inch main is a good basis for this purpose. All mains above six inches are calculated and reduced to the six-inch basis, while mains less than six inches are considered as equivalent to six inches. This suggestion is based on the theory that below this size the leakage hazard is greater. Smaller C. I. pipe than six-inch is more likely to develop cracks at service connections or breaks at joints. Wrought iron or steel pipe of small sizes has less thickness of wall to resist corrosion, thus it develops leaks along its surface more readily than the larger izes.

The leakage from transmission mains may well be expressed in number of cubic feet of gas per mile of six-inch main per year, and that the leakage from distribution mains should be expressed on the same basis, but should be segregated from that of transmission mains.

Leakage Carries with Pressure

It appears that the amount of gas which will escape from a given pipe when in the ground varies directly with the pressure. The difficulty of applying such a relation between various systems lies in the fact that where systems are designed for high pressure, the losses will be less than when even a medium high pressure is carried on a system design for low pressure. It is therefore necessary to know the character of the joints and pipe used.

The amount of leakage from a given system is influenced by its age. A new system can be expected to be quite tight, provided it has been properly tested and inspected when installed. In time corrosion, pipe fractures, extensions to the system, tapping for services, cause the leakage to increase. An operator accustomed to an old system may consider the loss from such a system as quite reasonable, since it is lower than that normally expected from older systems, and yet there may be accidental leaks which should be attended to and would escape detection unless in checking the results of that system, its age be taken into consideration.

The life of any system depends upon the character of the pipe, the protective coating used and the soil conditions. It is necessary to estimate the ultimate life of the system under consideration and to calculate the average percentage of that life at the time of investigation. The weighted average life of system may be worthy of consideration. The amount of unaccounted-for gas may be relatively low on account of rapid growth and the existence of a high percentage of new mains and services, while the old portion is leaking excessively. For this purpose, it is fair to choose as a standard upon which to base the coefficient, a weighted average life of 50 per cent of the ultimate life of the system under consideration.

Has Important Factor

The character of the gas seems to have some bearing upon the tendency toward leakage. Gases containing oils which will condense furnish a protective coating inside the piping, which also appears to saturate the joints and crevices, causing them to resist leakage. Changes to "dry gas" seems to increase the leakage, at least temporarily. It is evident that the specific gravity of the gas will influence the amount of leakage from a system. No attempt, however, has been made herein to take account of this as a system established upon a given character of gas may be expected to live up to the same standard as another upon the gas it distributes, provided all the factors as outlined herein are taken into consideration.

It is not possible to take care of unusual conditions in a general report. We have mentioned a few, such as where mains are under heavy traffic or where they cross streams or are being subjected to unusual electrolytic action, etc. It is well, therefore, to bear this in mind when making comparisons.

It is necessary to weigh the cost per mile of main against the results obtained in longer life and smaller amount of leakage. As this capital is expected to yield a certain rate of return, the difference in that percentage upon the investigation for various characters of installation must be balanced against the longer life, saving in leakage, and lower cost of maintenance. The cost of locating leaks and making repairs upon one system may be greater than that of another of the same age and yet be reasonable, provided the interest upon the second investment is sufficiently low and the amount of leakage is comparable.

In order to establish some of the factors mentioned herein, it has been necessary to obtain and tabulate data from a number of companies. Various groups of factors were assumed for these items. Others were estimated by calculation. Assuming that the average of the results of these companies is reasonable, it is possible to estimate the allowable amount of unaccounted-for gas for each series of factors for all companies, and then find the ratio (percentage standard) by dividing the estimated allowable unaccounted-for gas by the actual as reported. After adding each series of ratios and dividing by the number of companies, an average ratio for each set of factors is obtained. The set of factors which gives the average ratio nearest 100 per cent has been taken as representing the ones most nearly correct.

As a preliminary report on the unaccounted-for gas situation, it is interesting to develop coefficient for the various factors mentioned. These are worked out herein from the limited information available. They do, however, illustrate the value of the method followed.

As a great many of the important conditions are not known, and in many instances assumptions were necessary on account of insufficient data, not all the factors above mentioned have been included in the calculations. These factors and coefficients are not presented as reliable, but more with the idea of illustrating a method of approach to study this subject.

The factors considered are:

1. Total length and size of mains.
2. Number of services (length assumed constant).
3. Temperature of consumers' meters.
4. Pressure in the mains.
5. Pressure at the consumer's meter.
6. Condition of consumer's meter.

Therefore there are 440 joints per mile. If we choose 100,000 cu. ft. per year as the leakage per mile of main the leakage per joint is 225 cu. ft. A service pipe, including the top at the main, has, we assume, five joints.

TABLE I
Statistics from Annual Report of Seven Gas Companies

Gas company	A	B	C	D*	E	F	G
No. consumers....	169,164	27,188	10,474	89,102	1,935	12,041	13,150
No. services.....	135,143	26,885	.....	71,552	1,752	14,329	88,449
Cons. per mile....	108.9	51	75.5	78	57.6	71.9	161.5
Sales per cons....	42.5	37	37.4	37.8	22.5	33.6	39.9
Services per mile..	87	50.4	70	62.6	52	86.6	109
Sales, 1,000 cu. ft..	7,196,405.5	1,006,705.2	392,212.3	3,363,584	43,524	404,983	5,226,962
Mains distribution—							
L. P.	791.18	242.8	135.48	1,006.5	33.68	150.23	760.14
H. P.	762.64	290.1	3.57	77.84	.....	17.43	51.48
Total in miles.....	1,553.82	532.9	139.05	1,143.29	33.68	167.66	811.62
Average pressure—							
L. P.	8″	7″	4.5″	12″	4.75″	9.6″	10″
H. P.—lbs.	5.3	15–55	25	5.50	.....	10–25	6–26
Mean temp. in city, deg. Fahr.	62.4	60.5	59.3	55.5	60.4	59.8	56.1

*This district has 58.94 miles of H. P. transmission mains.

In explanation of item 6, it is well to mention that if a study is made of the meter situation in any territory and the results tabulated certain facts are observed. The average percentage of error of the meters is determined and the number of meters that are consistently D. R. noted. If by consistent effort the meters are changed and corrected the condition will improve, but a certain equilibrium is apparently reached and this factor is very useful to determine the unaccounted-for gas chargeable to meters.

It is assumed that all gas measured at the works is corrected to 60 deg. temperature and 30″ mercury pressure.

All sizes over six-inch have been reduced to a six-inch basis and all mains less than six inches in diameter are considered as equivalent to a six-inch main.

Basis for the relation between the leakage from mains and services:

One mile equals 5,280 ft.
One joint every twelve feet.

TABLE II
Conditions for Unaccounted-for Gas Factors

Groups of Factors	A Meter Error	B Cu. Ft. per Year per Service	C Cu. Ft. per Year per Mile L. P. Mains (6″ Basis)	D H. P. Relation
No. 1.....	1.2% slow	1,200	100,000	4th root p.
No. 2.....	1.2% slow	1,200	100,000	3rd root p.
No. 3.....	2 % slow	1,200	100,000	3rd root p.
No. 4.....	2 % slow	1,200	100,000	4th root p.
No. 5.....	2 % slow	660	100,000	4th root p.
No. 6.....	2 % slow	1,200	75,000	4th root p.
No. 7.....	2 % slow	660	75,000	4th root p.
No. 8.....	1.2% slow	1,200	75,000	4th root p.

For purpose of calculation this figure will be taken as 1,200 cu. ft. per service yer year.

For every 5 deg. Fahr. variation of the mean atmospheric temperature above or below 60 deg. a correction of 1 per cent has been made. This assumes that the gas is delivered at atmospheric temperature.

Compression Condensation

The condensation due to compression has been assumed to be water and is calculated on the basis of the assumption that the gas enters the compressor saturated at 60 deg. Fahr. and is delivered at 60 deg. Fahr. Upon this basis the loss due to compression is as follows:

In working out a relation between low pressure and high pressure leakage, a ratio was assumed which appeared to fit the case. In some calculations it was assumed the H. P. factor was $3/p$, whereas in others it was taken as the $4/p$. There is no reason for assuming these figures, but they appear to best fit the case.

$\sqrt[4]{}$	$\sqrt[3]{}$
10 lb. = 1.78	10 lb. = 2.15
15 lb. = 1.97	15 lb. = 2.46
20 lb. = 2.11	20 lb. = 2.71
25 lb. = 2.23	25 lb. = 2.92
30 lb. = 2.34	30 lb. = 3.10
35 lb. = 2.43	35 lb. = 3.26

All data required (outside of the various assumptions mentioned) was obtained from the 1920 annual reports of a selected number of utility companies.

Gauge pressure, pounds	1	5	10	15	20	25	30	35	40	45	50
Per cent of val. loss.....	0.106	0.45	0.73	0.90	1.03	1.14	1.20	1.26	1.31	1.35	1.39

TABLE III

Calculated Allowable Unaccounted-for Gas in Thousand Cubic Feet

Gas Co.	From 1920 Annual Reports Unaccounted-for Gas M Cu. Ft.	%	Group of Factors No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
A	855,505.6	10.6	740,000	818,000	875,000	787,000	701,000	740,000	643,000	711,000
B	242,871.8	19.4	195,000	233,500	248,000	203,000	177,000	179,000	154,000	171,000
C	60,195.6	13.3	41,250	41,550	44,500	44,200	42,200	40,700	38,800	37,600
D	502,921.0	13.03	432,000	44,250	470,000	460,000	418,000	429,000	387,000	401,000
E	8,069.0	15.57	6,525	62,550	68,700	68,600	5,920	6,020	5,080	5,670
F	64,337.0	13.55	54,000	56,500	58,200	57,100	50,000	51,000	45,500	49,400
G	686,638.0	10.93	464,500	466,000	510,000	50,600	455,000	485,000	43,300	441,000

TABLE IV

Unaccounted-for Gas Expressed in Ratios

Gas Co.	Group of Factors No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8
A ...	1.15	1.04	0.98	1.08	1.22	1.16	1.33	1.20
B ...	1.25	1.04	0.98	1.12	1.37	1.36	1.58	1.42
C ...	1.46	1.45	1.35	1.36	1.43	1.48	1.55	1.60
D ...	1.16	1.14	1.07	1.09	1.20	1.17	1.30	1.25
E ...	1.24	1.24	1.17	1.18	1.36	1.34	1.59	1.02
F ...	1.19	1.14	1.11	1.13	1.28	1.26	1.41	1.30
G ...	1.48	1.47	1.35	1.36	1.51	1.42	1.59	1.56

It must be understood that the factors given and the results obtained are not conclusive. However, they indicate the possibility of segregating the various causes of unaccounted-for gas and may furnish a clew to the factor that is responsible. Further data, particularly that which will be obtained through circulation of the questionnaire, submitted as a part of this report, will furnish additional information and eliminate some of the assumptions that have been made to obtain the factors in the tables.

The calculations in the tables given are simple.

Table I—The statistics here given were obtained from the annual reports of seven gas companies operating in California.

Table II—This illustates different combinations of the factors that are responsible for unaccounted-for gas. Eight such are given, but this by no means is the limit, for many other set-ups can be made, particularly if any factor is known to be different than tabulated.

(A) Meter Error.—This can be arrived at in any territory by a survey of the condition of meters. It is necessary to keep check on meter-test records for a period of months. It can then be determined the average percentage of error of the meters tested. After sufficient number of meters have been tested it will be noted that this percentage holds fairly constant. Usually it will run between 1½ and 2 per cent slow. If greater than this considerable of the unaccounted-for gas can be charged to this account. It might be advisable, in this case, to make an intense effort to improve the situation by a consistent changing of meters in service before seeking elsewhere the cause of unaccounted-for gas.

From the meter error the amount of unacounted-for gas is directly determined by assuming the percentage of accounted-for gas to be 100; the percentage of meter error either 98 or 98½ per cent, as the case might be. Then determining what 100 per cent represents in cubic feet, and from it ascertain what gas is lost through slow meters by applying the per cent of meter error to this figure.

(B) Cubic Feet per Year per Service.—This is all on assumption, based on service length, age or ground conditions. It is difficult to obtain reliable data on this factor. It is simple to apply the values given under each group by multiplying the same by the number of services in use.

(C) Cubic Feet per Year per Mile of L. P. Main on a Six-Inch Basis.—This value likewise is an assumption, but is based upon such data and publications as are available. The figures given are reasonable for ordinary conditions. The application of the value is evident. After reducing the miles of main to a six-inch basis multiply by value given in column to obtain leakage from this source.

(D) H. P. Relation.—This only applies to H. P. mains and is a factor for reducing the length of H. P. mains on a six-inch basis to a low pressure equivalent, the assumption being that the leakage, if any, for the same size of pipe will be greater for a higher pressure on the mains. The actual increase is a function of the pressure and, with the data now available, is approximately the factor given in this table.

Table III—This tabulates the calculations obtained by applying the factors listed under the different groups in Table II. It is interesting to note the various answers obtained under each group and compare them with the known unaccounted-for gas as given in the column so headed.

Table IV—This is but another set-up of Table III. Shows the ratio or relation of the values listed under the different groups in Table III to the true or known unaccounted-for gas.

It may be seen that these factors do not fit exactly and it is not expected that they will. It is needless to attempt to juggle them since the information available at this time is quite incomplete. If, however, the investigation is carried further it is expected that a future committee will carry on the work. Then the information gathered from various sources tabulated, it is possible that factors will be obtained that

will give a reasonably accurate means of determining the allowable leakage from the various causes.

After such determination then the proper procedure for eliminating leaks and lost gas can be given attention.

Thus the work of this committee is by no means complete, and it is our recommendation that the study of the subject be carried on during the coming year.

A Truthtful Novelty

Warning the People of the Dangers of Unscientific Heating

At the health exposition held in Portland, Ore., early in November, one of the striking illustrations of the advantages of heating by gas was a twelve-foot sign displayed by the Portland Gas & Coke Company, as shown here.

The design was painted in colors, with the diagram line in red. Evidently the solid-fuel line is estimated to fluctuate more than 20 deg. Down East here we know how that is with the average furnace. First the rooms get too hot and the windows are opened in order to cool the house off. Then the floors become so cold that the registers are all opened again until the overheated condition becames unbearable, and so on, ad infinitum.

The chart shows the heat of the gas heated house, controlled by a thermostat, running continually along 68 to 70 deg.

It cannot be considered gas propaganda nor prejudiced guesswork, for it is absolutely true that the ups and downs in the heat of the average American home are a tremendous source of danger to the health. Not only are they apt to cause sore throat or cold in the head but, what is worse, these are often the beginnings of more serious illness, sometimes terminating in death.

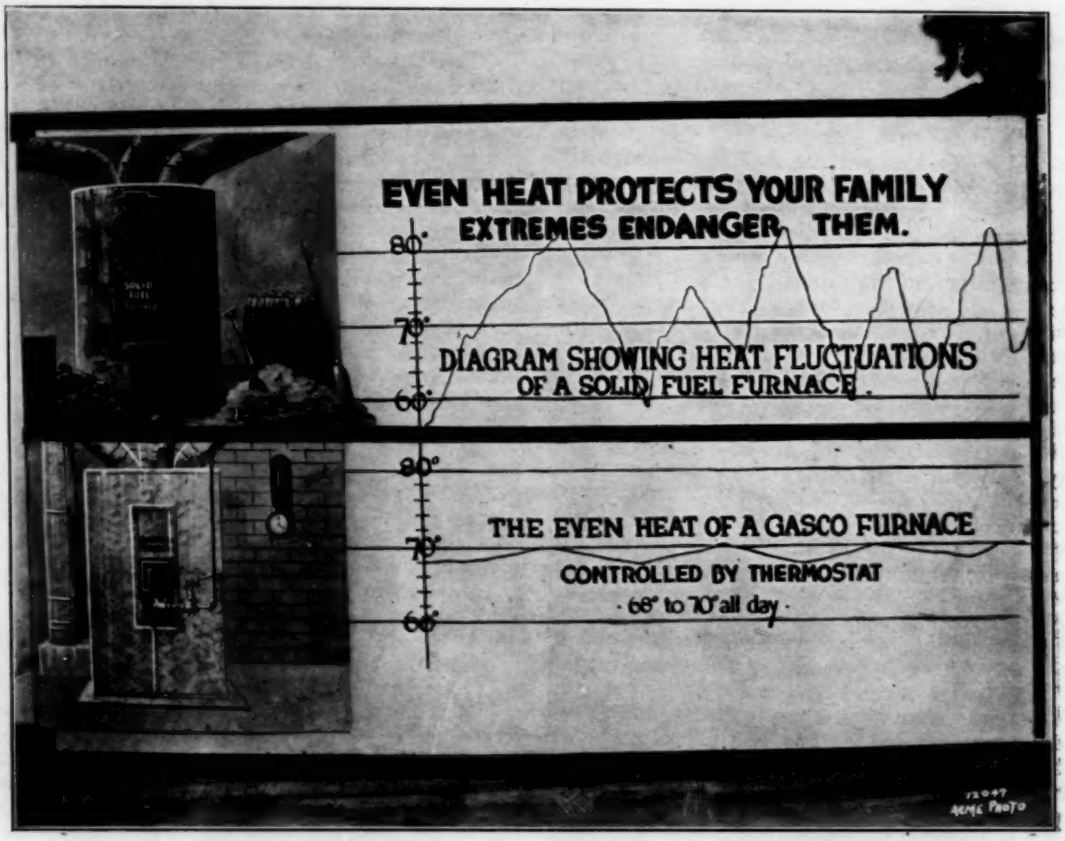
The Portland Gas & Coke Company did well in calling attention of the public so graphically to these facts at a time and place when the public mind was concentrated upon how to live longer.

To Hold Mid-Year Meeting Dec. 8

The Pennsylvania Gas Association will hold its mid-year meeting in York, Pa., on Friday, Dec. 8.

The sessions will be held in the York Country Club, beginning at ten o'clock in the morning and continuing until 12.30 p. m., when luncheon will be served to the members, as guests of the York Gas Company.

The afternoon session will be from two until four o'clock. The committee has arranged a most interesting program, and some of the subjects to be discussed are, "Pipe and Fittings," "Thoughts on New Business," "House Heating," "Accounting with Reference to Maintenance and Depreciation," "Blue Gas as a Fuel for Forged Lap Welding," and "Methods Used by the York Gas Company in Manufacturing and Selling Blue Gas."



Old-Age Meter Changes

Presents Most Vital Question of Consumers' Meters

It is the opinion of this committee that old-age meter changes is the most vital question in connection with the assignment of "Consumers' Meters." This report will therefore be confined to that portion of the meter traffic.

The committee believes that uniform regulations for retiring meters from service for all companies within the boundary of a State may easily do an injustice to one and be extremely lenient to another. While it is obvious that meters should be retired from service periodically for inspection, repairs and adjustment, just how often this should be done is a most important question. The different regulatory bodies throughout the country have established rulings governing age removals, and their requirements vary in excess of 100 per cent, as shown by the table at the foot of this column.

There is no evidence that these rulings are based upon a scientific consideration of the subject, and it would appear that the period after which a meter should be changed depends primarily upon local circumstances, which should be examined into in the case of each utility.

There have been written in the past a number of papers on the subject of periodical changing of meters, among the recent ones being a paper by C. R. Miller, superintendent of utilization, Portland Gas & Coke Company, at the last annual meeting of the Pacific Coast Gas Association, entitled "Old-Age Meter Changes." Stone & Webster, 147 Milk Street, Boston, Mass., published in their March, 1922, number an article by H. Vittinghoff. The findings in these articles are based on the analysis of company records involving thousands of meters, and the findings are valuable. The authors of these papers agree that the changing and repairing of meters represent a large expense to the utilities and should be reduced to a minimum by removing meters on account of old age only when necessary.

This is a report by a sub-committee of the Technical Committee of the Pacific Coast Gas Association. It was presented at the last convention of that association. The committee consisted of E. W. Hammond, D. J. Gray and C. R. Miller, chairman.—Editor.

The proper method of establishing the correct time to remove a meter on account of old age this committee believes to be the important question. The paper submitted by Mr. Miller last year was criticized because averages had been used. It was contended that while such a presentation might readily and actually reflect the company losses and expenses in connection with the meter traffic, the average results should not be used as a standard in dealing with individual consumers. Referring to the adjoining table, it will be seen that the public service commissions in some States direct that utilities change, test and repair their meters every three years, in other States every seven years. At least some of the regulatory bodies therefore have also made the error of imposing on the gas companies a burden on an average condition. This, therefore, works the same hardship on the utilities as is claimed on behalf of the individual consumer. Granting that this contention is correct, it would seem that a standard method for analysis of utility records should be perfected that would do justice to consumer and gas company alike, and with this in view your committee submits the following recommendation:

For example, if circumstances warrant an investigation on the part of a public service commission with respect to the correctness of the utility's meters, they shall analyze the meter records and base their judgment on such findings; on the other hand, if the gas company feels the present regulation is an imposition, they may present their analysis for consideration of the Public Service Commission shown on the following forms:

State	Service Allowed
Arizona	3 years
Nevada	3 years
Wisconsin	4 years
West Virginia	5 years
Washington	5 years
Pennsylvania	5 years
Oregon	5 years
North Dakota	5 years
North Carolina	5 years
New Hampshire	5 years
Missouri	5 years
District of Columbia	5 years
Connecticut	5 years
Colorado	5 years
California	6 years
New Jersey	6 years
Indiana	6 years
Kansas	6 years
Montana	6 years
Illinois	7 years
New York	7 years

FORM No. 1

METER TEST RECAPITULATION

We hereby submit data compiled from our records of all meters removed from service during the ..... months prior to ..... 192....

SUMMARY

Years in Service Since Last Tested or Repaired	% D. R.	% Stuck	% No Test	% More than —% Slow	% —% Slow to —% Slow	% —% Slow to —% Slow	% Between —% Sl. & —% Fast	% —% Fast to —% Fast	% —% Fast to —% Fast	% Over —% Fast	Actual No. of Meters Tested
Less than 1 Year											
1 Year											
2 Years											
3 Years											
4 Years											
5 Years											
6 Years											
7 Years											
8 Years											
9 Years											
10 Years											
11 Years											
12 Years											
13 Years											
14 Years											
15 Years											

1. D. R. meters are those meters that fail to register under standard test, but are still able to pass gas.
2. Stuck meters are meters that for some mechanical reason will not pass gas, and should not be included in this table.
3. No-Test meters are meters burned, leaking or damaged to a point where a satisfactory test cannot be made, and should not be included in this table.

NOTE: The lawful allowable per cent plus or minus should be used in column No. 8. The balance of the % blanks may be valued as the circumstances warrant, or as the commission may direct.

Per cent of stuck, D. R. and No-Test meters are listed, but not considered in the percentages shown for fast and slow meters.

All meters included in this report have been tested at ..... times their rated capacity.

Date submitted .....
Signed .....
By .....

FORM No. 2

D. R. METERS

We hereby submit data compiled from our meter records of all ..... light D. R. meters removed from service during the ..... months prior to ..... 192....

Make of Meters	No. of Meters Tested	Total Number Meters D. R. Acct. of Diaphragm	Total Number Meters D. R. Other Causes	Per Cent of Total D. R. Acct. of Diaphragm	Per Cent of Total D. R. Other Causes	RECORD OF D. R. METERS BASED UPON THE LIFE OF THE DIAPHRAGM ONLY—BY YEARS. OTHER D. R. CAUSES NOT INCLUDED IN THIS TABULATION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15 to 20	% of Specific Make D. R.

1. D. R. meters are those meters that fail to register under standard test, but are still able to pass gas.
2. Stuck meters are meters that for some mechanical reason will not pass gas, and should not be included in this table.
3. No-Test meters are meters burned, leaking or damaged to a point where a satisfactory test cannot be made, and should not be included in this table.
4. This form is good for one size meter only, but may include any number of makes.

All meters included in this report have been tested at ..... times their rated capacity.

Date submitted .....
Signed .....
By .....

(*Continued on page* 588.)

As the Journal Views It

Man's Inhumanity

Man's inhumanity to man certainly takes some queer twists at times. Usually this inhumanity is caused by thoughtlessness or carelessness. But until we are the victims of this inhumanity we are not inclined to realize just how severe it is. Now the AMERICAN GAS JOURNAL has been the victim of this inhumanity. Here's how:

In our issue of Nov. 4, in these editorial columns we told something of the magnitude of the work of publishing the AMERICAN GAS JOURNAL daily during the recent national convention at Atlantic City. We told of the number of copies circulated in Atlantic City (1,200, to be exact) and we tried to tell of the number that were mailed daily from that resort. But we were thwarted in our efforts by this inhumanity which we are just now referring to. Our printer allowed us to refer to the 1,200 copies all right, but, by dropping two lines from the editorial he had us saying that we mailed this number of copies in place of the actual 1,800 that were put in the hands of Uncle Sam's mailmen every day.

So it is that we desire to be put right before the industry. Not only did we circulate 1,200 copies at the convention (and those who were there know how quickly they were seized upon), but we also sent out 1,800 copies to every gas company in the United States.

And we don't mind admitting that next year we are going to have at least double the amount, for the demand for those issues is still continuing and we can't think of anyway of satisfying those who want them. We owe the gas industry an apology for not printing several thousand extra, and we promise that it won't happen again. But we do want to say that the best way of assuring yourself of your set of copies is to order them in advance. Line forms on the right.

Meet This False Propaganda

During the past few weeks there have appeared numerous articles in various newspapers throughout the United States describing accidents which are blamed on the use of gas. Fires, explosions, poisonings, etc., all due to gas, according to these accounts, have caused loss of life and great property damage.

One of the most recent ones was the report of an explosion of a "water heater." The headline used the words "water heater," which, however, did not appear in the body of the article. For our own satisfaction we investigated this report nd found that it was due to a coal-fired boiler and had nothing to do with gas. But the newspaper that published the original statement, when this was brought to its attention, refused to print any correction.

In another case two people were poisoned and it was instantly blamed on the use of gas. As a matter of fact, there was a defective gas heater in use in that home, but it was so apparently defective that it completely passes understanding as to how it could possibly have been used at all. But that did not stop a large daily newspaper from publishing a serious warning, on its editorial page, regarding the use of gas appliances.

Now we do not claim that it is impossible for gas appliances to cause accidents. Such is far from our mind, but we do say that in practically every case the condition is exaggerated. Carelessness, we are told by the fire underwriters, is the cause of most of the fires of the United States, but the newspapers do not instantly rush into print with warnings. The human element, it is said, is always considered as a large factor in these cases. Then why isn't the human element considered in these other cases?

We believe that every gas company owes it to the industry, as a whole, to immediately investigate every report such as we refer to and to bring out the real facts. Once this is done, call the attention of the newspapers to the true conditions, and if they refuse to make a correction, use every means at hand to get the truth before the consumers. We believe that most newspapers will be fair enough to want to get the real truth and will be glad to publish it. But be sure of your facts.

This matter is of extreme importance and no effort should be spared in any direction. A great deal of harm has been done, but it certainly is possible to prevent further injury to this industry.

(*Continued from page* 586:)

FORM No. 3

METER TEST RECAPITULATION

We hereby submit data compiled from our record of all.....light meters manufactured by the ..... Company removed from service within the last ..... months prior to ..... 192....

SUMMARY

Years in Service Since Last Tested or Repaired	% Stuck	% D. R.	% No Test	% More than —% Slow	% —% Slow to —% Slow	% —% Slow to —% Slow	% Between —% Sl. & —% Fast	% —% Fast to —% Fast	% —% Fast to —% Fast	% Over —% Fast	Actual No. of Meters Tested
Less than 1 Year											
1 Year											
2 Years											
3 Years											
4 Years											
5 Years											
etc. to 15 years											
TOTAL											

1. D. R. meters are those meters that fail to register under standard test, but are still able to pass gas.
2. Stuck meters are meters that for some mechanical reason will not pass gas, and should not be included in this table.
3. No-Test meters are meters burned, leaking or damaged to a point where a satisfactory test cannot be made, and should not be included in this table.

NOTE: The lawful allowable per cent plus or minus should be used in column No. 8. The balance of the % blanks may be valued as the circumstances warrant, or as the commission may direct.

Per cent of stuck, D. R. and No-Test meters are listed, but not considered in the percentages shown for fast and slow meters.

All meters included in this report have been tested at ..... times their rated capacity.

Date submitted .....
Signed .....
By .....

The results from Form No. 2 should reflect: (1) What per cent of the different makes are chargeable with the greatest percentage of D. R.; (2) what size or make of meter offers the best protection to diaphragms; (3) a progressive record of the life of a diaphragm by makes; (4) number of D. R. meters traceable to other causes.

In the papers referred to, Mr. Vettinghoff says that it is generally agreed that the life of a leather diaphragm cannot be put at more than seventeen years. Mr. Miller finds, upon examination of 60,000 meter-repair cards, that the last 500 diaphragms were replaced after an average service of ten and one-quarter years, but contends that the life of diaphragms as shown in his paper is contingent upon policies in vogue some years ago, when it was common practice to change diaphragms while overhauling old-age meters and when, without doubt, many useful diaphragms were discarded.

D. R. meters are not only the enemies of correct registration—it is the committee's belief that some makes of meters are more correct than others operating under the same conditions and circumstances. For that reason Form No. 3 is submitted. This form does not materially differ from Form No. 1, except that it deals with one make of meter or may be used for one size of one make, as conditions may warrant.

This committee thinks that Form No. 1 will show the healthy or unhealthy condition of a utility's meters with sufficient clearness.

It must be remembered that Form No. 1 is a recapitulation of *all* meters, and is intended to reflect a picture, as it were, of the general meter situation; or a kind of a trial balance, so to speak. The results obtained will aid materially in directing further investigation. We imagine there is scarcely a gas company that has standardized to a point where all their meters are of the same make or manufacture, to say nothing of size and capacity.

Without doubt no two companies have followed the same method, schedule or policy of changing and repairing, nor is there any company which has not changed its policies at intervals frequent enough to materially change the average proof of meters coming out of service from year to year.

For example, some companies have replaced diaphragms when meters are removed on account of old age, while others make only slight repairs and adjustments. Since this committee agrees, however, that the useful life of a meter in service depends almost entirely upon the condition of its diaphragm, an analysis of D. R. meters by diaphragm age is of economic importance. Form No. 2 is therefore suggested.

The committee also agrees with the ruling of the Wisconsin Railroad Commission, headed "Rules Regarding Gas Service 1913—Accuracy of Gas Meters," when they say it is unreasonable to expect absolute accuracy in any measuring device, and in the case of the gas service meter it is unreasonable to expect it to be absolutely correct or even to have exactly the same error in registration over a long period of time, etc.

We contend that it is unreasonable to expect that D. R. meters can be eliminated, but we contend that such failures should be reduced to a minimum, and a company so doing should receive consideration as to just what per cent of D. R. meters would be acceptable. The committee thinks that this would depend on the general showing reflected in Form No. 1, in the case of the particular utility under consideration, and has not attempted to submit a standard form to act as a meter-repair record. We have not emphasized the cost of the

traffic when carried on in an unscientific manner. The one message we hope will register is:

First—The fact that any regulation that may be established for the removal of meters due to old age should be established entirely upon the examination of the records of that particular utility and the conditions under which these meters must operate.

Second—That the forms as submitted should be adopted, or a modification of these, which in the judgment of the public service commission will reflect sufficient information to enable such governing bodies to regulate the old-age meter traffic as the circumstances may truthfully warrant.

Utility Men in National Advertising Assn.

The Public Utilities Advertising Association, an organization which will gather together in one unit all the companies and individuals in the utility business who are interested in the subject of advertising, has been officially recognized by the Associated Advertising Clubs of the World through the National Advertising Commission at a meeting held in Chicago on Oct. 18.

News of the official notification reached the gasmen during the Atlantic City convention and a hurried call for a meeting was sent out, and on Oct. 26 in the Hotel Traymore the following officers and directors were elected:

Directors for one year—Labert St. Clair, director advertising section American Electric Railway Association, 8 West Fortieth Street, New York, N. Y.; George F. Oxley, director of publicity, National Electric Light Association, 29 West Thirty-ninth Street, New York, N. Y.; Charles W. Person, secretary advertising section, American Gas Association, 342 Madison Avenue, New York, N. Y.

Directors for two years—H. M. Lytle, associate director, Illinois Committee on Public Utility Information, 142 South Clark Street, Chicago, Ill.; W. A. Griffin, assistant to vice-president, American Telephone & Telegraph Company, 195 Broadway, New York, N. Y.

Directors for three years—B. J. Mullaney, executive department, the Peoples Gas Light & Coke Company, 122 South Michigan Avenue, Chicago, Ill.; J. C. McQuiston, advertising manager Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.; W. P. Strandborg, publicity agent Portland Railway, Light & Power Company, Portland, Ore.

Delegates to National Advertising Commission—Frank Leroy Blanchard, B. J. Mullaney and J. C. McQuiston.

Officers—President, W. P. Strandborg; vice-president, J. C. McQuiston; secretary, George F. Oxley; treasurer, B. J. Mullaney; chairman membership committee, Benjamin E. Ling, director Ohio Committee on Public Utility Information, Cleveland, Ohio; chairman program committee, W. P. Strandborg.

Membership in this association will be open to gas, central station, street railway and telephone companies who are regular users of paid advertising space, and to individuals in these companies who are in charge of the advertising work.

Anyone who is conversant with the high standing of the Associated Advertising Clubs and the good work it is doing for the cause of honest advertising and business practice, will recognize the fact that an invitation to the utility men of the country to form a unit of their own and attach themselves to the parent body is a move of vital consequence. For a number of years, and particularly during recent years, the gas industry has made steady strides in the advertising world. At the present time it is spending something like $1,500,000 in newspaper and magazine space but despite this fact the industry has received no recognition from the publishing interests of the country and at various times has been accused of not believing in advertising. This holds true as well of the entire utility industry with its investment of approximately $15,000,000,000. Although its advertising has increased tremendously during the last three years, it, too, has been without any recognition and no utility man has ever been able to attend a meeting of the Associated Advertising Clubs and listen to papers dwelling on the fundamentals of his own business. The industry has never had any national standing or recognition so far as advertising is concerned and it goes without saying that its relations with publishers have suffered accordingly.

The new Public Utility Advertising Association will place the utility companies of the country on an advertising par with other leading interests which advertise. It will also place the utility man in high class company with the business leaders of the land. For the first time in his life the utility man will be able to throw his weight into the cause of better advertising and better business practices. He will not only secure recognition from the publishers of the country but at the annual convention of the Associated Advertising Clubs, the next one of which will be held in Atlantic City next June, he will be able to listen to a program devoted exclusively to his business and will be able to meet for the first time fellow workers in advertising in all the various branches of the great industry which affords him a living.

If for no other reason than the right to use the statement, "Truth in Advertising," this new association would be justified. It is not a "new" association in the strict meaning of that term but is a unit of a very old association. A membership campaign is now being planned and every advertising man in the gas industry will be communicated with. It goes without saying that we want to have a representation of gasmen in this new organization that will redound to the credit of the entire gas industry. At Atlantic City next June the gasmen will have an opportunity to show how interested they are in the subject of advertising and its various ramifications.

First Gas Stove in Philadelphia in 1876

The first gas stove on record was used in 1876 by a baking powder company to demonstrate cake baking at the Philadelphia Centennial Exhibition. At that time the gasoline stove was in general use, and until the end of the century the gas stove made no great headway. When about 1900, the quality of gasoline became so poor as to decrease the usefulness of the gasoline stove, its coolness and speed were found to exist in the more dependable gas stove, and the latter grew rapidly in favor.

There are now some 7,000,000 gas cooking appliances in use, and nearly three million gas water and room heaters, while more than half of the 326 billion cubic feet of gas consumed in the United States in 1921 was used for cooking and heating.

"Readiness to Serve" Charge Only Fair Basis

Henry L. Doherty Says This Will Save Gas Industry

Detroit, Mich.—When the public takes the advice of the State utility commissions instead of expecting the commissions to follow its dictation, then and then only will the full benefit of intelligent regulation be realized, Henry L. Doherty, head of Henry L. Doherty & Co. and president of Cities Service Company, told the National Association of Railway and Utility Commissioners at their annual convention here recently. Mr. Doherty said that the progressive and constructive public service companies want intelligent regulation and that they do not want to fool with politics.

In discussing justice in regulation, Mr. Doherty said that probably the utility operators themselves are to blame for the fact that "a large part of our citizens still think it is the duty of the State commissions to give the public service companies hell instead of justice." Reviewing the period of regulation without responsibility through which the public service companies have passed, Mr. Doherty said that agitations for reductions in rates were formerly "a daily diet but an infrequent accomplishment,'. and that in the old days "a bill or ordinance would be passed which was generally intended by the agitators to be so drastic that it could not be accepted, an injunction would be issued and then, after a long and expensive legal battle, the court would be compelled to declare the rate confiscatory and the issue would still be alive as the basis for another political campaign.

Unfair Competition

Leading up to the question of jitney competition, the speaker called attention to the fashion which developed creating regulatory bills and legislation for public service commissions. "The public," he said, "told the public service companies, 'we are going to recognize you as a necessary and natural monopoly, but if we do this we must regulate your service and earnings.' This work," said Mr. Doherty, "was hardly under way before the street railways of the country were subjected to the rottenest and most unfair competition. I refer to jitney competition. The jitney," he continued, "runs only when it pays to run, when it takes from the regulated street railway a large portion of the cream of the business, which the street railway companies depend upon to compensate them for the regular schedules which must be maintained in the hours of light traffic when cars are run at a loss."

Mr. Doherty called attention to the necessity for the adoption of a fair method of profit sharing, suggesting the adoption of a standard rate for utility service, with the understanding that all profits above a certain fair return upon the capital invested in the business be shared on a dividend basis with the consumers of the service provided.

Championed Commission Control

Mr. Doherty championed the theory of control by State commissions and criticized the division of authority now existing between the State commissions, city governments and State legislatures. He said, "If it is necessary to reserve any control for the citizens of the city or the municipal government then this control should not be of a character to prevent the utility from functioning. I know the cry of home rule is potent, but it should not prevail with thinking people in this instance. One might paraphrase and say, 'Home rule, what economic crimes have been committed in your name!' "

Transportation Problems

Mr. Doherty suggested that the taxicab business in many of our American cities be declared a public utility, a monopoly, and schedules adopted that would produce real service. "Such regulation," he insisted, "would distribute taxicabs which now congregate in the congested districts to the exclusion of the outlying districts so that when taxicab service is necessary it would be available. Incidentally he said that the average length of taxicab rides would be less.

He also suggested that in our highly congested cities such as New York thought should be given to the problem of treating the delivery of goods and wares as a public utility, the reason being the diminution in the cost of distribution to the public and the lessening of congestion in city streets. Mr. Doherty emphasized the necessity for the adoption of service charges on a standardized basis or on the base of readiness to serve. This readiness to serve method of charging, he explained, distributes the cost in a fair and equitable manner to every customer of a public service company, and in the long run is fairer not only to the company but to the customer as well.

Methods of Charging

"As far as methods of charging are concerned," explained Mr. Doherty, "there is no hint or suggestion of any better method being found in gas or electricity than the readiness to serve method.

Many gas companies face a gloomy future and nothing will save them except the adoption, to a large degree, of the principles of the readiness to serve method of charging. The system of charging for gas purely on the basis of consumption is too inequitable to waste time on in discussion. We found that under the stress of war conditions, rates based only on consumption had to be advanced to the point of diminishing returns and service charges had to be used in many cases not simply as a matter of justice but as a matter of necessity. If a customer is paying you $30 a year for gas under the old system and under the new would pay $15 as a readiness to serve charge, and then get his gas at half the present rate, it doesn't take much imagination to realize the stimulation this will give to sales."

Changing to the B.t.u. in New York State*

What It Means to the Average Consumer

By HERMAN RUSSELL, Vice-President and General Manager Rochester (N. Y.) Gas & Electric Corporation

Every trade, industry and profession has its units of measure, many of which are common to our everyday existence, while others are peculiar to a specific trade or industry. The more technical an industry is, the more specific and exact its units of measure become. We say the temperature is 26; one wears a 36 suit; our car makes 20 miles on a gallon; we have a business engagement at 10 a. m.; shoes cost $12.

But how much do we know about the terms we use? We accept them at face value and use them glibly, but do we understand their exact significance? Probably not; moreover, we probably don't care. They are all units of measure denoting specific things and, somewhere, there is a definite basis for their use and a method for establishing their accuracy.

So the gas industry has its units. It deals in pounds, tons, gallons, degrees of temperature, per cents, cubic feet, etc. Nothing obscure or formidable in that list. It also talks about B.t.u. and that sounds mysterious; there must be a trick in it.

What a B.t.u. Is

Most of our common units are of British origin and the British thermal unit is among them. We call it familiarly by its initials for brevity's sake—B.t.u. To be explicit it is the amount of heat required to raise the temperature of one pound of water one deg. Fahr. A pound is about one pint. If we put a pint of water on the stove, place a thermometer in it, light the gas and watch the mercury climb up the thermometer, we know that every time the temperature increases one degree the water has absorbed one B.t.u. Instruments called calorimeters have been built for doing just this thing, only doing it with accuracy. The calorimeter has been compared with a standard instrument; the thermometers have been standardized by the Bureau of Standards at Washington and the scales and weights have been carefully checked for accuracy.

We have employees at the laboratory throughout the twenty-four hours of every day in the year who do nothing else but run B.t.u. tests on the coal gas, carbureted blue gas and the mixture of the two going out to the company's customers. In these tests, the apparatus shown in the illustration is used.

So, by burning a known amount of gas and heating a weighed quantity of water whose temperature rise has been read, we can accurately calculate the number of heat units in a cubic foot of gas.

Without going into the technique of making these tests, it is sufficient to say that every detail established by scientific authorities to standardize the method and the apparatus is rigidly adhered to so that the results as they enter the permanent records of the company may be accepted as true.

In order that the employees of this company may be correctly informed concerning the recent order of the Public Service Commission reducing the price of gas 5 cents per thousand cubic feet and the heating standard from 585 to 537 B.t.u., together with the effect of those changes upon the company and our customers, it is important at this time that you should know all the facts both for your own satisfaction and in order that you may answer inquiries intelligently.

The order went into effect Oct. 15 as far as the reduction in price is concerned. The first bills carrying the reduced rate of $1.05 will cover the gas consumption from Sept. 15 to Oct. 15. No reduction in the heating value will be made for some time, the reason for this being that we anticipate that the normal fall excess consumption of gas, together with the poor pressure complaints, will be wrongly ascribed to this reduction, and we desire to counteract this false assumption as far as possible, especially as the heavy consumption of gas common to this season of the year has been intensified by the shortage of coal.

The 5-cent reduction means a revenue loss to this company of approximately $150,000 per year. The saving due to the reduction in the standard amounts to 3½ cents per thousand cubic feet, or $105,000, as our gas sales per year are approximately 3,000,000 cu. ft. The saving comes in the use of less oil in our carbureted blue gas process and will be one-half gallon of oil per thousand cubic feet of total gas made. Our oil at the present time costs us 7.1 cents per gallon.

Questions and Answers

I am giving below some of the questions which I have been asked relative to this change and the answers to these questions:

1. Will the reduction cause our customers trouble in the operation of their gas-burning appliances?

Answer—No, it is not probable that our customers will notice any difference for the reason that the change in the specific gravity of the mixed gas will be so slight that readjustments of appliances will be unnecessary. The gas we furnish is a mixture of coal gas and carbureted blue gas. As coal gas constitutes approximately two-thirds of our total product, it follows that coal gas controls to a very large extent the specific gravity of the gas sold and there will be no change in our coal gas operation. During the war, at a time when it was impossible to secure gas oil, we operated for several months on a standard ranging from 500 to 550 B.t.u. At that time we were not making nearly as much coal gas as now, so that the change in specific gravity of the gas was far more than will now be the case. We experienced but little trouble with appliances during that period.

2. Will the increase in gas consumption in appliances be in proportion to the drop in the standard—

*Reprinted from *Gas and Electric News*, of that company.

that is, there is an 8 per cent reduction in the heat unit value of the gas—will the gas consumption in the home be increased 8 per cent? If not, why?

Answer—No, the increase in gas consumption, if any, will be much less than 8 per cent.

The reason for this is that a large amount of the gas used in our homes is wasted. Burners are turned on and the gas lighted before the utensils are placed over the flame; oven burners are lighted too soon; burners are unnecessarily turned on full and heat goes to waste; water heaters are left burning and water is heated which is not used, and so on, so that in the average home a large portion of the gas is wasted. The waste depends upon the size of the burner opening, the pressure, the specific gravity of the gas and the time element. It is independent of the heating value of the gas. Also, the quantity of gas used is dependent upon the flame temperature to a considerable degree and the flame temperature has not been lowered by the reduction in heat units. Further, many of the appliances will operate more efficiently on a gas of lower heat value than 585 B.t.u. All of these factors operate against increased consumption. Experience during the war and a careful check on customers' bills over a period of several months when the heat value of the gas ranged from 500 to 550 B.t.u. showed that there was no noticeable increase in gas consumption. For these reasons the consumption will not increase in proportion to the reduction in the heating value, if indeed it increases at all.

3. Why is not the price reduced according to the reduction in heat standard?

Answer—The saving effected by the reduction varies with different companies according to the process of manufacture and the price being paid for gas oil. With most companies it is less than five cents. In our own case it amounts to one-half gallon of oil per thousand cubic feet of mixed gas made, or 3½ cents. It is quite obvious that there are many costs entering into the cost of gas other than those contributing to its heating value. Labor, repairs, return from sale of by-products, raw materials (other than oil), taxes, insurance, to a large extent distribution costs, are independent of the heating standard. In other words, the cost does not vary in proportion to the variation in heat units. Like a suit of clothes, if the price of the wool entering into a suit of clothes should be reduced or increased one-half, you would not expect the cost of the finished suit to be reduced or increased one-half.

4. What was the reason for the order, anyway? If the companies don't benefit and the consumer isn't saved anything, why the order?

Answer—We believe the consumer will benefit at once, as pointed out above, but the purpose of the order was more to protect the consumers in the future. Due to the high standards of the past it has been impossible for companies to develop their manufacturing processes along those lines which would produce gas the cheapest, and by cheapest is meant that gas which will give the customer the most heat for his dollar, because these processes would not produce a gas of the required standard. As a result it was necessary to use the carbureted blue gas process which requires the use of a large amount of oil. This process is flexible in that by varying the amount of oil used, a gas of from 320 to 650 B.t.u. may be manufactured and this is the only commercial process wherein a gas of high heat unit value can be made. Thus the manufacture of coal gas was to a very large extent prevented because coal gas processes produce a gas of less than 585 B.t.u., although by the coal gas process to-day a gas is produced at less cost per unit of heating value. The new standard will permit companies to develop their manufacturing processes along economical lines which will react to the benefit of the consumer by keeping costs down. Your company was one of the first companies operating in New York State to take advantage of the change in gas standard in 1917 from a candle-power to a heat unit standard, and the new coal gas plant was made possible by this change. With the change in the standard from 585 to 537, it will now be possible to keep pace with the growth of the city and its gas requirements by continually enlarging the coal gas operation. As a result of its large coal gas plant this company is to-day selling gas at the lowest rate in the State and the rate here is one of the lowest in the country where satisfactory service is being rendered.

Also, gas oil, the medium employed in making a gas of high B.t.u. value, is steadily becoming higher in price and more difficult to obtain due to its conversion into gasoline. The gas industry was faced with the necessity of using a product rapidly becoming scarcer and continually rising in price. The new order goes a long way toward relieving that situation.

Tacoma Gas & Fuel Company Installs Young-Whitwell Process

Tacoma Gas & Fuel Company, one of the operated public utilities of Standard Gas & Electric Company, is proceeding with the installation of equipment for the utilization of a new method of water gas manufacture—the Young-Whitwell process. This process is a method of manufacturing water gas with slack coal (screenings) instead of coke as a generator fuel, the principal advantage being a marked saving resulting from the difference in the cost of these two fuels. There also is some decrease in the amount of oil used, and a material saving in maintenance costs.

In effect, the process is a method of completely gasifying cheap grades of coal in one operation, and at the same time adding sufficient oil to produce the required calorific standard. This is done in a standard water gas set.

The new process of gas manufacture is a development of the Pacific Northwest, the first experimental as well as commercial installation having been in successful operation at the Everett, Wash., plant of the Puget Sound Gas Company since Aug., 1921.

The inventor of this process is D. J. Young, vice-president and general manager of the Tacoma Gas & Fuel Company. Mr. Young has been with the Byllesby organization for ten years, having been superintendent of the gas department of the San Diego Consolidated Gas & Electric Company before going to Tacoma in 1919. Prior to his connection at San Diego he was superintendent of gas manufacture of the Los Angeles Gas & Electric Corporation.

Mr. Young is an optimist on the future of the gas business, and is an advocate of scientific rates and calorific standards that will permit the company to produce the highest overall efficiency from coal pile to consumer's kitchen.

Gas Lighting Versus Electricity

Report Presented at Pacific Coast Gas Association Convention

The supremacy of commercial gas lighting from the standpoint of quality of illumination and of economy of operation were long ago established, and up to the present writing we do not know of any other source of lighting, excepting sunlight, which equals it. Its rays are soft, pleasing to the eye, and under its soft rays colors may be determined as readily as under the light of the sun. From the standpoint of design, workmanship and ease of maintenance, the modern inverted gas arc lamp is a meritorious product.

Why then, with all these inherent good qualities, should electricity come to be considered as the standard of illumination.

First, because the central stations from the very inception of the use of electricity have unceasingly bent their efforts toward conquering the lighting field, and these interests have never failed to be sustained in their efforts.

Second, electricity lends itself to more flexible use and in that respect is more convenient than gas.

Third, as to economy of operation, the table submitted with this paper conclusively proves that the use of gas is far more economical. The range of percentage of cost in favor of gas lighting being from 8 1/2 to 26 1/5 per cent per month, based on a five-hour service daily.

A study of the table divulges the fact that there is a very fair comparison of units as, for example, the use of the Radio X single mantle residence lamp, as compared with a sixty-watt Mazda lamp.

There are still thousands of gas lamps in use. These will continue to be used for many years because of the superior quality of light and its economy of operation.

It is our belief that the efforts of the gas company in the lighting field should be put forth in an effort to obtain their fair share of commercial lighting, rather than going to the great expense of an attempt to obtain residence gas lighting, which in the opinion of your committee is not worth while, either in gas consumption to be obtained or assurance of success in meeting electric competition in that field.

It has been our experience that commercial gas lighting, if well handled by the gas company and proper maintenance attention given to the units, that a fair chance of success is assured.

We believe the straight gas company makes a great mistake in not continuing aggressive efforts to obtain new business and to hold old gas lighting consumers. It is a favorable load, as gas lighting is used at off-peak hours.

Combination gas and electric companies have invariably looked with disfavor upon gas lighting and have never permitted it to interfere with their electric business, the result being that invariably due to this combination control gas lighting has suffered severely.

It is possible for the gas company to purchase today better gas lighting equipment than ever before in the history of the industry. By adopting a policy of rental and maintenance, valuable business is still to be obtained.

Tomes have been written on the subject of gas lighting, street, commercial and residential. Volumes have been written on maintenance of gas lamps and complete figures are available as well as method of operation through manufacturers of lighting equipment, and straight gas companies still engaged in this profitable business. Paper after paper has been written in an attempt to arouse new interest in gas lighting on the part of active gasmen, but apparently most companies have decided to let the business go by default.

Surely no efforts were spared by the manufacturers of lighting equipment to produce such units as would assist in every way the efforts to the gasmen, but it is the consensus of opinion that they prefer to put their efforts into the field of heating, domestic and industrial uses of gas and permit the electric central stations to completely dominate the field.

We have had experience of cities where electricity was sold as low as one cent per kilowatt hour and gas at 90 cents, and in spite of this low electric cost, so long as the gas company put forth a reasonable amount of effort to properly take care of its gas lighting, succeeded in holding the major portion of it.

Report Opens

This report is submitted for your consideration not as a criticism, not as a suggestion, nor with any hope of arousing a new fighting spirit in connection with saving profitable gas lighting to you, but only that you may read, analyze and consider whether it is worth while for you to completely sacrifice a business which gas company records prove to be a profitable source of revenue.

Perchance some of you of bookish turn of mind have at some time or other read Robert Louis Stevenson's essay, "A Plea for Gas Lamps":

"But where soft joys prevail, where people are convoked to pleasure and the philosopher looks on smiling and silent, where love and laughter and deifying wine abound, there, at least, let the old mild luster shine upon the ways of man."

Note.—The first two tables are compiled, based on the following tariffs:

1. Gas at $1 per 1,000 cu. ft.
2. Electricity— 9 K. W. H. at 8 cents
   80 K. W. H. at 7 cents
   100 K. W. H. at 6 cents

The above rates are representative of what might be considered average figures. Average per cent cost of electricity in excess of gas for lighting tables one and two, comparative sized lights (only) equals 20 per cent, approximately.

A fact not to be overlooked in discussing the relative merits of gas and electric lighting, is that after about 200 hours' service the usual electric light globe emits only about 80 per cent of its original candle-power. —*Standard Handbook for Electrical Engineers.*

COMPARATIVE COST OF OPERATION AND MAINTENANCE FOR GAS AND ELECTRIC LIGHTS

Table I
Cost of Gas Lighting

Name of Light	No. of Burners	Gas. Cons. Cu. Ft. per Hour	Approx. Mean Horiz. Candle-Power	Average Monthly Maintenance Charge	Average Monthly Gas Bills, Five Hours Service Daily	Total Monthly Cost
Radio X	1	5.0	86	$0.13	$0.75	$0.88
851 Welsbach	1	5.5	111	0.13	0.83	0.96
20 Welsbach	1	9.0	180	0.33	1.35	1.68
30 I. S. Hump	3	13.0	280	0.33	1.95	2.28
30 O. S. Hump	3	13.0	280	0.33	1.95	2.28

Table II
Cost of Electric Lighting

Size of Light	Approx. Cons. Kw. Hr. per Hour	Approx. Mean Horiz. Candle-Power	Monthly Cost of Globe Replacement	Average Monthly Elec. Bill, Five Hours Service per Day	Total Monthly Cost
60-watt Mazda	60	62	$0.07	$1.00 (Min.)	$1.07
100-watt Mazda	100	129	0.16	1.14	1.30
150-watt Mazda	150	212	0.22	1.67	1.89
200-watt Mazda	200	305	0.30	2.19	2.49

Table III
Cost of Gas Lighting per Hour

Name of Light	Cost of Gas per Hour at Cost Below 1,000 Cu. Ft.								
	$1.00	$0.95	$0.90	$0.85	$0.80	$.075	$0.70	$.065	$0.60
Radio X	$0.0050	$0.0047	$0.0045	$0.0042	$0.0040	$0.0037	$0.0035	$0.0032	$0.0030
851 Welsbach	0.0055	0.0052	0.0050	0.0047	0.0044	0.0041	0.0039	0.0036	0.0033
20 Welsbach	0.0091	0.0086	0.0081	0.0076	0.0072	0.0067	0.0062	0.0052	0.0053
30 I. S. Hump	0.0129	0.0123	0.0117	0.0111	0.0104	0.0098	0.0091	0.0085	0.0079
30 O. S. Hump	0.0129	0.0123	0.0117	0.0111	0.0104	0.0098	0.0091	0.0085	0.0079

Table IV
Cost of Electric Lights (Mazda) per Hour

Size of Light	Watts per C.-P.	Cons. Kw. Hr. per Hr.	Mean Horiz. C.-P.	Cost of Current for One Hour at Cost Below Kw. Hr.					
				$0.09	$0.08	$0.07	$0.06	$0.05	$0.04
60-watt Mazda	0.97	60	62	$0.0054	$0.0048	$0.0042	$0.0036	$0.0030	$0.0024
100-watt Mazda	0.77	100	129	0.0090	0.0080	0.0070	0.0060	0.0050	0.0040
150-watt Mazda	0.70	150	212	0.0135	0.0120	0.0105	0.0090	0.0075	0.0060
200-watt Mazda	0.65	200	305	0.0180	0.0160	0.0140	0.0120	0.0100	0.0080

Table V
Cost of Gas Lighting per 1,000 Lumens for 1,000 Hours

Name of Light	No. of Lumens	Cost of Gas for 1,00 Lumens at Figure Below per 1,000 Cu. Ft.									
		$1.00	$0.95	$0.90	$0.85	$0.80	$0.75	$0.70	$0.65	$0.60	$0.55
Radio X	782	$0.64	$0.61	$0.58	$0.54	$0.51	$0.48	$0.45	$0.42	$0.38	$0.35
851 Welsbach	942	0.58	0.55	0.52	0.49	0.46	0.43	0.41	0.38	0.35	0.32
20 Welsbach	1,592	0.56	0.53	0.50	0.47	0.45	0.42	0.39	0.36	0.33	0.31
30 I. S. Hump	2,396	0.54	0.51	0.49	0.46	0.43	0.40	0.38	0.35	0.32	0.30
30 O. S. Hump	2,396	0.54	0.51	0.49	0.46	0.43	0.40	0.38	0.35	0.35	0.30

Table VI
Cost of Electric Lighting per 1,00 Lumens for 100 Hours

Size of Light	No. of Lumens	Cost of Elec. Current for 1,000 Lumens at Fig. Below per Kw. Hr.				
		$0.09	$0.08	$0.07	$0.06	$0.05
60-watt Mazda	612	$0.88	$0.78	$0.68	$0.59	$0.49
100-watt Mazda	1,280	0.71	0.63	0.55	0.47	0.39
150-watt Mazda	2,100	0.64	0.57	0.50	0.43	0.35
200-watt Mazda	3,040	0.59	0.52	0.46	0.39	0.33

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company		Maturity	Nov. 16, 1922 Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	110½	111
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	95	95¼
Columbia Gas & Elec. Co.	First 5s	May 1, 1927	96½	97
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	110	111
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Feb. 14, 1935	91½	93
New Amsterdam Gas Co.	First Consol. 5s	Jan. 1, 1948	84½	86
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	May 1, 1949	94	95½
Detroit City Gas Co.	Gold 5s	Jan. 1, 1923	99⅞	100
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	99½	102
Hudson County Gas Co.	First 5s	Nov. 1, 1949	93	95½
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	92¾	94⅛
Louisville Gas & Elec. Co.	First & Ref. 7s	June 1, 1923	100	100¾
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	92	93½
Milwaukee Gas Light Co.	First 4s	May 1, 1927	91½	92½
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	91	91½
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	105½	—
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	94½	95
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept. 1, 1947	89½	90½
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	95	97½
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	92¾	93¾
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	84	86
Southern California Gas Co.	First 6s	Nov. 1, 1950	98	99
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	91¼	—
Washington Gas Light Co.	General 5s	Nov. 1, 1960	94¾	95¼
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	91	93

Cities Service Company in October

In the twelve months ending Oct. 31, earnings of Cities Service Company continued to show substantial increases. Net earnings from operations of the Public Utility Division for October were better than for any corresponding month in the history of the company. Gross earnings in the period increased to $14,558,623, as compared with $14,417,560 in the preceding month, while net increased from $13,985,011 to $14,123,421. After the payment of all interest charges and the dividends of $4,913,716 on the preferred stock, there remained for the common stock $6,952,014, which was the equivalent of $14.94 earned on the average amount of common stock outstanding during the twelve months. This compared with $14.82 a share earned on the outstanding common stock in the twelve months period ending September 30, 1922. For the month alone gross earnings increased to $1,114,937 as compared with $973,873 in the month of Oct., 1921. Net last month totaled $1,074,587 as compared with $936,177 in the corresponding month in 1921, and there was available after taking care of all interest charges on the preferred stock $414,000 as compared with $359,787 in October of the preceding year. Total surplus and reserves as of Oct. 31, 1922, were $46,739,386.

One outstanding phase of the earnings position of the company is shown by the analysis of the earnings of the various divisions of the Empire Gas & Fuel Company. In the case of the pipe line, refineries and natural gas divisions, current earnings are running at a rate which indicates an increase in net for the year which will let those divisions show more than enough in earnings to take care of all of the interest requirements of the Empire Gas & Fuel Company on its entire outstanding funded debt. This is entirely apart from earnings which are made by the oil division of the Empire Gas & Fuel Company and is a good indication that the securities of the company are not dependent upon the market price for crude oil for their margin of safety.

Financial Notes

The Standard Oil Company of Ohio has declared the regular quarterly dividend of $3 a share and an extra dividend of $11 a share payable Jan. 11 to stockholders of record Nov. 24. This is the same rate as was paid in the first three quarters of the year.

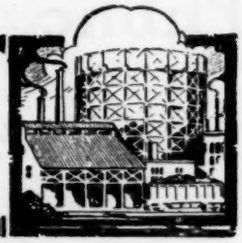
The Mexican Seaboard Oil Company has declared the regular monthly dividend of 50 cents a share, payable on Nov. 27 to stock of record Nov. 20.

The Cumberland Pipe Line Company has declared the regular annual dividend of $12 a share, payable Dec. 15 to stock of record Dec. 1.

Government Coal Lands

Western people are very active after coal lands, so the latest report, issued Oct. 1, shows. According to statistics compiled by the Federal Bureau of Mines there has been 263 permits issued. For Colorado there are fifty-one permits, six leases and two licenses. For Montana, thirty-six permits, two leases and one license. For Washington, fourteen permits and two leases. For Wyoming, seventy-six permits, nine leases and one license.

NEWS OF THE GAS INDUSTRY



New York Consolidated Gas Issues New Stock

New York, N. Y.—The directors of the Consolidated Gas Company of New York have decided to change the 1,250,000 shares of $100 par value capital stock now outstanding into 2,500,000 shares of common stock of no par value, and to issue an additional 500,000 shares of non-par stock. Stockholders of record of Dec. 9, 1922, will have the right to subscribe to the additional stock at $50 per share to the extent of 20 per cent of their holdings of no-par-value stock.

The directors announced a third change in the capitalization scheme of the company by authorizing 300,000 shares of 6 per cent cumulative participating stock, of $50 par value, which will be offered for subscription to employees and consumers of the company or subsidiary companies. Formal notices were sent to the stockholders calling them together in two special meetings, to be held on Dec. 4 and Dec. 5, to vote on these measures.

The first recommended change means that holders of existing shares of Consolidated Gas stock will receive two shares of stock with no nominal or par value in exchange for each share of par-value stock now held by them. The preferred stock, the directors stated, "will participate in any distribution of earnings above $4 per share per annum on the no-par-value common stock, at the rate of 1 per cent yearly for each $1 of additional dividend above $4 per share per annum paid on the no-par-value common stock."

"This total increase in the capital stock of the company," said George B. Cortelyou, president of the company, "will give the company an additional $40,000,000 of cash capital, which is required for the discharge of its floating indebtedness, including $20,000,000 of its 7 per cent notes, which will shortly mature, to capitalize expenditures made by the company out of income and to provide for further additions and extensions to the operating system of the company."

Payments for the 500,000 additional shares of no-par stock will be called for in three installments, the first of 40 per cent, payable on Dec. 30, 1922; the second of 30 per cent on March 15, 1923, and the third of 30 per cent on June 15, 1923, with the privilege of anticipating any of such payments.

Great secrecy marked the action of the directors yesterday, and the announcement was not given out until after the close of the market. The move was a distinct surprise to Wall Street, which had been hearing reports for some time that a stock dividend would be declared.

Some intimation of what the directors had in mind, however, reached the financial district before noon. Consolidated Gas broke sharply on the report that new stock would be issued and sold lower during the rest of the day. The stock closed at 129⅜, a net decline of 4½ points, on a turnover of more than 25,000 shares. In explaining to the stockholders the reasons for the new capitalization scheme, Mr. Cortelyou said:

"The principal objection to shares having a fixed par value of, say, $100 is that the representation made in the certificate carries with it the implication that this expresses the actual value of the share in the property of the corporation represented by the stock, whereas such is rarely the case. The property may be worth more than the par value of its capital stock or it may be less. All that the stockholder possesses, in any case, is such an interest in the entire net assets of the corporation as the number of his shares bears to the total number of shares outstanding. By issuing stock without par value, the stockholder has the same proportionate interest in the assets and management of the corporation; but there is no longer a misleading statement on the face of his certificate.

"The reason for having stock without par value is especially applicable in the case of public utility corporations. The courts have held, with increasing emphasis, that such corporations are entitled to an adequate return on the reasonable value of the property used or useful in serving the public. The value of the property devoted to the public use by your company is largely in excess of the par value of its capital stock, without reference to the value of the stock of subsidiary companies held by it, so that it is entitled to earn much more than a bare return upon the present par value of its capital stock. These facts escape the attention of a large portion of the public, who are easily misled into believing that when a company pays a dividend, it has no right to pay more than the legal rate of interest on the par value of its capital stock. Much of the misunderstanding in regard to the charges made by public utility companies would cease if the consumers were not misled by the rate of dividend paid upon the par value of the capital stock.

"Your company and its subsidiary gas and electric companies have always striven to maintain relations of mutual good-will and helpfulness with their employees and have sought to promote the welfare of their employees in various ways. As a consequence, they have a loyal and efficient body of employees, comprising about 20,000 persons. To further increase this feeling of common interest in these utilities, which are so vital to the welfare of the great population centered here, there is no more effectual way than to give the employees a substantial interest in the successful management and prosperity of the business. With that end in view, the plan was formed to give the employees the opportunity to obtain 6 per cent preferred stock at an attractive price, which would have the same element of security as a direct obligation, with the additional advantage of a participation in the expected benefits to be derived from increased efficiency in operation. Similar reasons have influenced the

board of trustees in recommending that some portion of this $15,000,000 of preferred stock be sold on similar terms to the consumers of the company and its subsidiaries."

Light and Gas Merger Asked

Jefferson City, Mo.—A merger of a number of electric and gas companies in north and northwest Missouri has been applied for to the State Public Service Commission. Authority was asked not only to merge properties, but to form one corporation to own and operate plants.

The new company will be called the North Missouri Power Company and will have an authorized capital stock of $1,500,000.

Included in the proposed merger will be:

The Excelsior Springs Water, Gas & Electric Company and its subsidiary corporations; the Electric Light Company, of Edina, Knox County; the Electric Light Company, of Novinger; the Electric Light Company, of Brookfield.

A hearing will be in Jefferson City Nov. 20.

Frank A. Boy, of the law firm of Rozzelle, Boy & Vineyard, and A. Z. Patterson, of Kansas City, are the attorneys who presented the merger papers to the commission. Present shareholders in the corporations named will be the chief owners of the new corporation.

Natural Gas for Chickasha Is Planned

Chickasha, Okla.—The William H. Riley Company, with offices in Ardmore, Okla., Ranger, Texas, and holdings in Tampico, Mexico, has applied to the city council here for a franchise to serve natural gas in Chickasha. The council has the matter under favorable consideration with the idea of having Chickasha served with natural gas from the large gas area recently discovered in Grady County.

Tide Water Oil Earnings

The Tide Water Oil Company in nine months ended Sept. 30 earned a surplus of $3,294,517, after expenses, depreciation and depletion, equal to $6.63 a share on $49,671,000 of capital stock against a deficit of $4,202,507 in the same period of 1921.

New Gas Meters Show Rapid Growth of Population

Brooklyn, N. Y.—An important evidence of the growth in population in Brooklyn during the year 1922 is the increase in the service of the gas companies of the borough. The Brooklyn Union Gas Company has added approximately 18,000 new meters to its service system since Jan. 1, 1922. Of this total there are 4,500 new users in Jamaica and 2,800 in Newtown, leaving 10,700 for Brooklyn. It is estimated that the total increase for the year in Brooklyn will pass the 12,500 mark. This company has over half a million customers.

The Kings County Lighting Company, serving Boro Park, Bath Beach, Bay Ridge, Bensonhurst, Ulmer Park and Homewood, reports a total of 3,590 new meters installed up to Oct. 1, and judging from the large increase of business in Oct. and the present waiting list, it is estimated that the total will reach 6,090 by the end of 1922. There have been $45,000,000 new buildings completed in this section during the past year.

The Brooklyn Boro Gas Company, serving the Coney Island and Sheepshead Bay districts and Flatbush as far north as Foster Avenue, had installed 2,911 new meters up to Nov. 1, and from orders now in hand it is expected that the total will reach 4,000 by Jan. 1. This company had 2,635 meters in service on Nov. 1.

Adding the above totals gives a grand total of over 22,500 new gas meters will have been installed by the end of the year 1922. This would mean that number of new families in the borough this year, which on the basis of four and one-half persons to the family means a permanent addition of 90,000 to the population of Brooklyn this year.

A Perpetual Exposition

For some time it has been stated that Leonard L. Steel, head of the Steel's stores, was contemplating a large exposition at Niagara Falls. Mr. Steel visited Denver recently to look over the new and handsome building he entrusted to his engineers to erect, and he was asked relative to the Niagara Falls exposition.

"Oh, yes, we are working on plans to erect an exposition, the cost to be about $100,000,000, the buildings ready by 1926. The exposition is to be perpetual and to be built on either side of the falls. The ultimate exposition will have an American hotel on the American side and a Canadian hotel on the Canadian side, State and Province buildings for all of the States and Provinces in the United States and Canada, foreign buildings, agricultural units and special units. It has for its object the continuous display of the products of all industries and occupations for the benefit of the buyers, traders and peoples of the world of all classes."

The aim of Leonard R. Steel, the erstwhile country lad, is to show people how to live, to help every man secure good food and merchandise at a reasonable cost—a home of his own to live in and an income large enough to maintain his family and himself in comfort.

Theory Versus Practice

Municipal ownership as a governmental theory is not half as popular as it was some years back. Our own municipal water plant has given sufficient satisfaction, but if the individual bills to householders were added to the revenue collected through taxation for water purposes, including the interest and sinking fund charges on bonds for water plant investment, it would be found perhaps that Atlantic City is paying mighty dearly for its municipally owned water plant.

At least the private business concern applies business methods to its management of public utilities, and if it is inclined to overstep the mark in trying to get something for a return there are enough regulatory laws and there ought to be enough honesty among regulation-enforcing officers to protect the public. The trouble with municipal ownership is that too often ordinary ward politics supersedes business principles in the conduct of a public utility—and nothing could be more expensive to the consumers.—*Editorial, Atlantic City, N. J., Daily Press.*

W. W. Sayers in Philadelphia

W. W. Sayers, of the Link-Belt Company, has been promoted to the position of chief engineer of the company's Philadelphia works and Eastern operations.

For many years Mr. Sayers represented the company in the Chicago territory, in the lines related to power house machinery, coal storage, peck carriers, crushers, etc., and later in charge of the locomotive crane department.

His headquarters will be at the Philadelphia office in the future.

Would Link Public Closer to Utilities

Rye, N. Y.—Journalists of Westchester County and representatives of public service corporations gathered in the Westchester-Biltmore Country Club here at a luncheon given by the New York State Committee on Public Utility Information to meet the newspaper men of this county.

M. S. Sloan, in one of the principal speeches, explained the purposes of the information committee, of which he is chairman. Mr. Sloan, who also is president of the Brooklyn Edison Company, said:

"The New York State Committee on Public Utility Information, of which I have the honor to be chairman, is a department of public relations for the gas and electric industry of this State. Its purpose is to promote better relations between utility companies and their customers by bringing about a more complete understanding of our business by the general public and a more complete understanding of the general public by the men who conduct this great business.

"Our committee exists to furnish accurate information and facts about our business to any citizen or group of citizens. We prepare now and send out weekly to the newspapers information about the various phases of our industry. We do this in the belief that our business with its great investment and widespread service, which touches so very intimately the domestic, social, commercial and industrial life of the people, is a matter of concern to the public, and the public are entitled to know about it. They should be informed about our organization, income, needs and possibilities. We should tell them about the bigness, the importance, the necessity, the growth and development of our business; about the payroll, the amount of materials purchased and taxes paid; about the physical condition of the properties, and about the stability and permanency of our business. Few other American industrial operations can show such a record of stability and fundamental soundness as the gas and electric. Those that compare with them are the other public utilities.

"We should tell why we are natural monopolies; of the demands for our service; the importance of our companies to the communities; how we are financed; how the utilities are taking the customer into partnership or ownership of our properties; our obligation to furnish good, adequate and continuous service at fair and reasonable rates; and the steady demand for new necessary capital in our business in order that we may keep up with the progress and growth of the various communities in which we operate.

"We believe that our committee, which collects facts about the industry and makes them available to the newspapers in regulation newspaper form, is in some degree at least a service to the newspapers. The reception our matter has had generally among the newspapers in the State seems to justify that belief.

"The committee is working along two other lines—it is endeavoring to establish a condition where each individual company will give out its own local news items; where it will see to it that each newspaper in the community in which it operates is informed of any event of general interest which happens in the business life of that company.

"We believe this is due the newspapers as news-gathering organizations and to the public which they serve. Horeover, we are endeavoring to show to the companies the advantage of more extensive and more regular and continuous advertising. Each company has many things to tell its customers which are of interest to them and of importance to the community. These things, however, are not always news items or information of a character which a newspaper could or should print in its news or editorial columns. Space for information of this nature should be paid for as a matter of business, and it is good business for the companies to buy space in order to tell these things to the public.

"Behind the investments in utilities there is a history of human study and investigation and achievement in all the sciences; of improvement in service rendered and in accuracy of performance, and of a growth and demand of a necessity that is not yet ended. The world can never think how to live without them again. They are the very heart of every community, furnishing a vitally necessary service as cheaply as human skill and brains and experience permit.

"The communities need us and by the same token we need the communities. We need their understanding of our business, our problems and our ideals. I do not know a single utility executive who is not animated by a genuine ideal of public service. We haven't any kick with our customers or with the officials who regulate our operations.

"We know that the prosperity of every institution patronized by the public is dependent upon the goodwill of the people who comprise the public. Good-will is the most valued asset of any business. It follows prestige, which is reputation for excellence of performance. We fully acknowledge that it is our duty to give the best and most efficient service, and we know by doing this we best serve the public, our stockholders and the interest committed to our charge.

"What we seek is the genuine friendship of our customers built on a knowledge of exact facts and understanding of our business, and we are willing to go as far toward the other fellow as we know how to bring that about. That is, as briefly as I know how to tell, the reason for the existence of our committee."

Francis A. Stratton, of Mount Vernon, president of the Westchester Lighting Company, was host on behalf of the committee. Among his guests were ex-Judge William L. Ransom, R. M. Searle, president of the Rochester Gas & Electric Corporation; Dr. B. W. Stilwell, vice-president of the Westchester Lighting Company; C. G. M. Thomas, vice-president of the Consolidated Gas Company; Travis H. Whitney, assistant to the president of the Kings County Lighting Company; William J. Welsh, president of the New York & Richmond Gas Company; N. F. Brady, president of the New York Edison Company; Carl H. Graf, vice-president of the Municipal Gas Company of Albany, and Adolph S. Ochs, publisher of the New York *Times*, who said that he hoped newspapers would spread the platform, as expounded by Mr. Sloan, of better relationship between utility corporations and their customers.

Memphis Gas Concern Sold for $10,000,000

Memphis, Tenn.—The properties of the Memphis Gas & Electric Company have been sold at auction for $10,000,000. Creditors holding claims for approximately $12,500,000 made the purchase, being represented by F. B. Odlum, of New York. The sale followed the adoption of a city ordinance authorizing the transfer and its confirmation will end receivership.

The new concern will be ready to take over and operate the company by Jan. 1. The new owners are pledged to spend $2,000,000 in improvements within eighteen months.

H. C. Abell, of New York, will head the Memphis Light & Power Company and will direct operations.

Laclede Gas Company

St. Louis.—Laclede Gas Company has filed petition with the Missouri Public Service Commission asking for the continuance of the present rates until the reproduction valuation of the company's properties has been finally determined.

Counsel for company has filed objections with the petition against the tentative valuation of $30,000,000 as fixed by the commission on the ground that it is too low and that the company is entitled to have its valuation fixed at its reproduction cost, which company claims is $40,000,000. Company further contends that during the period from Jan. 1, 1919, to July 31, 1922, it has never made a net profit in excess of 4.8 per cent.

Pryor to Get Gas Soon

Pryor, Okla.—Pryor will be supplied with natural gas within a short time, city officials predict. The new pipe has arrived at Tiawah and laying of the line from the Rucker gas field, seven miles west of Pryor, has begun. The field will supply both Pryor and Choteau.

Jersey Towns Get Reduced Gas Rates

Trenton, N. J.—Gas rates charged by the Coast Gas Company, of Belmar, the Lakewood Gas Company and the Shore Gas Company have been lowered through action of the State Public Utility Commission.

This means lowering of the cost to householders in Belmar, Asbury Park, Avon, Spring Lake, Ocean Grove and Lakewood, all served by the concerns. The Coast Gas Company suppies the other two. Rates to consumers will range from $1.65 and $1.85 for the first 2,000 cu. ft. to $1.75 per thousand for the excess over 10,000 ft. of gas used.

Glassboro Remodeling Plant

The New Jersey Gas Company, of Glassboro, N. J., is preparing to remodel the water gas apparatus at its plant, and to that end has awarded contract to the U. G. I. Contracting Company, of Philadelphia.

Gets Site for Jersey Gas Plant

The Public Service Corporation of New Jersey has announced that it had acquired forty-eight acres lying along the Raritan River, opposite New Brunswick, on which will be constructed a new gas plant, with an initial capacity of about 4,000,000 and an ultimate capacity of about 18,000,000 cu. ft. a day, to provide service for Middlesex, Union and Somerset counties, N. J.

Winchester, Va., Orders New Equipment

Winchester, Va.—The new equipment to be installed at the gas plant here will include a water tube condenser, an exhauster, two large purifiers, a station meter, a 20,000 cu. ft. capacity relief holder and a 150,000 cu. ft. storage holder. The order for the apparatus, together with the yard pipe to connect up new units, was placed with the Western Gas Construction Company.

Roanoke Company Adds to Equipment

The U. G. I. Contracting Company, of Philadelphia, has been awarded contract by the Roanoke Gas Light Company, Roanoke, Va., for the installation of one seven-foot cone top set of carbureted water gas apparatus.

Ask Receiver for Gas Company

Warsaw, Ind.—Receivership for the Warsaw Gas Company has been asked by the Citizens' Trust Company, of Huntington, and the Union Trust Company, of Detroit. The two trust companies, holders of mortgages, charge the company defaulted in payment of bonds.

Philadelphia Adds Controls

In addition to the twenty-nine automatic controls now operating in its Station A and Station B, the Philadelphia Gas Works has just placed an order with the U. G. I. Contracting Company to furnish three more automatic controls for water gas sets at Station B. This will give the Philadelphia Gas Works a total of thirty-two U. G. I. automatic controls in successful operation.

Washington, Iowa, to Have New Generator

In addition to the other material recently noted in these columns, purchased by the Iowa Gas & Electric Company, order has recently been placed for a new generator. This work is being taken care of by the Western Gas Construction Company.

Air-Steam Mixture Probe

Urbana, Ill.—The investigation of air-steam mixtures is the outgrowth of an investigation of the reheating of compressed air by C. R. Richards, former director of the engineering experiment station and dean of the college of engineering, and J. N. Vedder, research assistant in mechanical engineering, the results of which have been presented in engineering experiment station bulletin No. 30. In this earlier investigation the employment of steam as a reheating agent was found to result in an increased thermal efficiency for the mixture of air and steam, as compared with the use of either air or steam separately, in an engine operating expansively. These results were such as to justify a further study of air-steam mixtures.

It is the purpose of this bulletin to treat the subject of air-steam mixtures in considerable detail, both by means of a theoretical discussion and by reporting actual tests made with different proportions of air and steam at different initial air temperatures and under various load conditions. To facilitate the practical application of the results secured, the thermal properties of various mixtures are presented in the form of Mollier charts. These charts will greatly simplify the solution of problems connected with the subject.

Copies of bulletin No. 131 may be obtained without charge by addressing the Engineering Experiment Station, Urbana, Ill.

L. M. Jordan, superintendent gas department, Rocky Mount, N. C., Public Works is back on the job after a month's absence due to illness.

The Florence Gas & Fuel Company, Florence, S. C., has started the work of improving their gas plant. A new boiler house has been started, as well as a new pump room, and some of the machinery is now on the ground. The installations and building will be erected by local mechanics as far as is possible.

Mountain View to Have Gas Service

Mountain View, Cal.—At a recent meeting of the city commission the question of granting franchise to the P. G. & E. was the leading matter, and, after hearing from the company's attorney and Superintendent John D. Kuster, the commission started action to grant the necessity franchise. An ordinance of intention was drafted and will now be published the required number of times and work will be pushed as rapidly as possible to the end that Mountain View may have gas service. Mr. Kuster in his talk to the commission stated that the Chamber of Commerce had done exceptional work and if it had not been for the organization that Mountain View could not have expected to get gas at this time. He also said that this community had made a unique record in obtaining support for its chamber, as only eleven of the people who signed the chamber petition failed to sign the contract with the gas company. Two cars of main line pipe are now on the ground and will be laid at once from the Mayfield connection and about Feb. 1 street lines will be started. It is thought that the service will be complete before the first dating, which was made as June 1.

Supreme Court Denies a Raise in Rates

The State Public Utilities Commission granted the Kansas Gas & Electric Company permission to increase its rate on electricity sold to the Wichita Railroad & Light Company, but the railroad company claimed violation of price contract when the rates were raised, carried the case to the United States Supreme Court, where the commission's grant was nullified and the matter reverts back to the commission.

Gas Drilling Held Up

Mention having been made that it was contemplated to extend the gas mains from Rock River, Wyo., to Salt Lake City, and that the Rock River Syndicate were digging another well with the hope of reinforcing their already large supply, word comes that at a depth of 1,190 ft. water was encountered, and because of this and the inclement weather, the drilling is held up for better weather.

Nothing more has been said relative to starting work on the extension of the pipe line, but that is hardly practicable before spring, except in spurts and stops, a very costly method.

Financial

The Standard Oil of Ohio has declared an extra dividend of $1 and regular dividend of $3 common dividend, both payable Jan. 1 to stock of record Nov. 24.

Houston Oil in the quarter ended Sept. 30 had net earnings of $397,627 after expenses and tax, but before depreciation and depletion, against $363,258 in the third quarter of 1921.

The Crescent Pipe Line has declared the regular quarterly 75 cent dividend payable Dec. 15 to stock of record Nov. 24.

E. I. du Pont de Nemours & Co. are planning to increase its authorized common capital stock from $80,000,000 to $100,000,000 by the authorization of 200,000 additional shares of a par value of $100 a share, and to transfer part of its surplus to the capital account by declaring a 50 per cent stock dividend. A special meeting of the stockholders has been called for Dec. 4 to vote on the propositions.

To Get Draft on Gas Regulation

Birmingham, Ala.—Service regulations, which will meet the requirements of its recent decision covering gas extensions, will be prepared by the Alabama Public Service Commission and will be forwarded to the Birmingham Railway, Light & Power Company for adoption shortly, according to Commissioner William L. Harrison.

Drafts of the proposed regulations are expected to be received by the city and the company, it was stated. Suggestions as to the regulations, which the city believed should be put into effect to meet the recent decision of the commission, were filed by Commissioner Harrison and W. J. Winn, city attorney.

No formal hearing was held in Montgomery, according to Commissioner Harrison. The city was represented by Mr. Harrison. The city was represented by Mr. Harrison and Mr. Wynn and the company by J. S. Pevear, president, and T. M. Rogers, attorney. An informal conference was held in which President Patterson and the engineer for the Public Service Commission participated.

According to the statement of Mr. Patterson, no rehearing of the question will be gone into at this time. Mr. Pevear and Mr. Rogers, he said, argued in favor of the regulations recently filed and maintained that the commission had made an error in arriving at the basis on which a free extension up to a cost of $94.30 was required to be made by the company for certain classes of consumers.

Strong opposition to any rehearing and reopening of the decision was expressed by the city's representatives. Commissioner Harrison stated that the suggested regulations filed by the city conform to the decision and provide for the free extensions up to a cost of $94.30 and for interest at 6 per cent on deposits for extensions costing more than that sum, and for competitive estimates of the cost of the extensions.

Larger Dividends Expected from Consolidated Gas

The *Wall Street Journal* in its issue of Nov. 16 had the following to say regarding the recapitalization of the Consolidated Gas Company of New York:

One of the results looked for from the recapitalization plan of Consolidated Gas Company is higher dividends. It is expected that new no par common stock will be placed on a $5 annual dividend basis at the next quarterly meeting, late in January. This would be equivalent to a $10 rate on the present stock. In addition stockholders subscribing to new no par common at $50 a share would get a 10 per cent return from a $5 annual rate.

There is no question that the company is able to pay a $5 rate on the 3,000,000 no par common shares which will be outstanding when recapitalization plan is complete. New York Edison Company alone earned $11,917,683, which included United Electric Light & Power, in 1921. Thus, this one subsidiary earned equivalent of approximately $4 a share on the 3,000,000 new common shares.

The $3 dividend on the new 300,000 shares of preferred will require $900,000 and if the new no par value common gets $5 a share the preferred is paid an additional 50 cents a share. This would bring preferred dividend up to $1,050,000 a year.